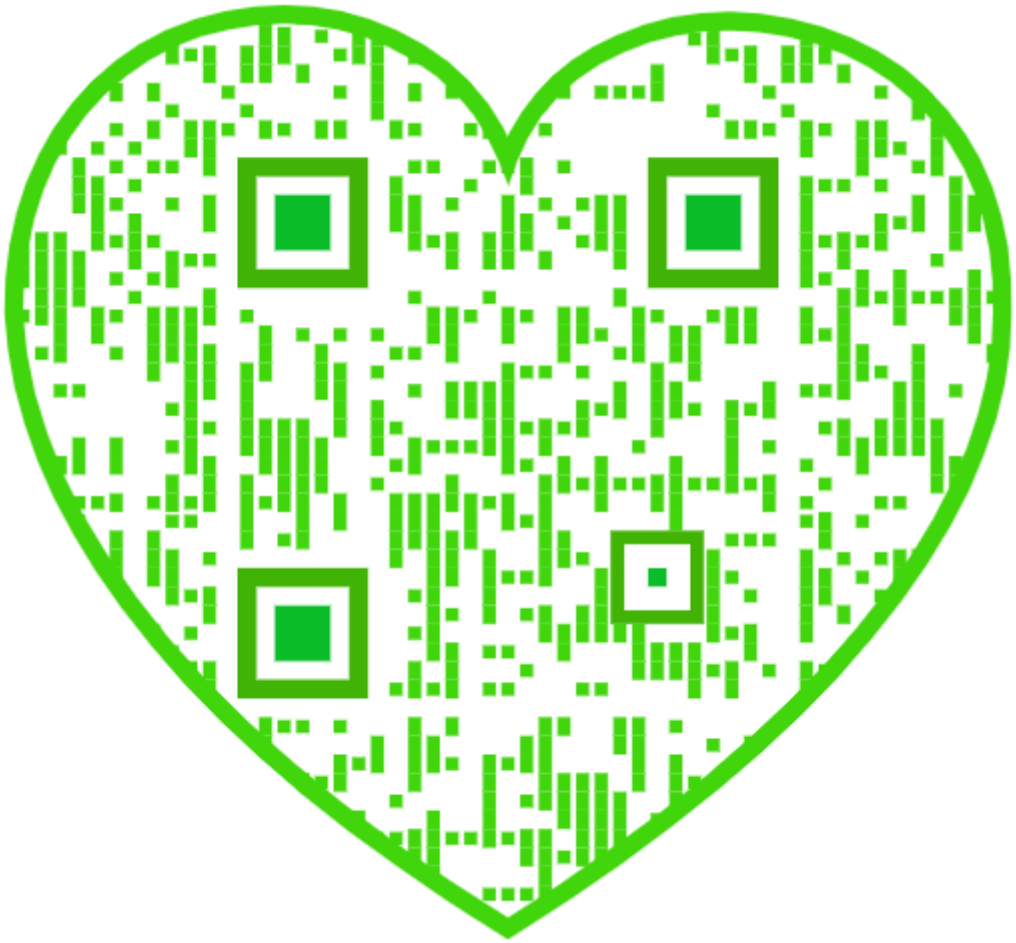

# THE AMERICANA

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# KEY TO PRONUNCIATION.

| | |
|---|---|
| ä | far, father |
| ā | fate, hate |
| a or ă | at, fat |
| ã | air, care |
| ạ | ado, sofa |
| â | all, fall |
| ch | choose, church |
| ē | eel, we |
| e or ĕ | bed, end |
| ė | her, over: also Fr. *e*, as in *de*; *eu*, as in *neuf*; and *oeu*, as in *boeuf, coeur*; Ger. *ö* (or *oe*), as in *ökonomie*. |
| ę | befall, elope |
| ẽ | agent, trident |
| ff | off, trough |
| g | gas, get |
| gw | anguish, guava |
| h | hat, hot |
| *h* or H | Ger. *ch*, as in *nicht, wacht* |
| hw | what |
| ī | file, ice |
| i or ĭ | him, it |
| ì | between e and i, mostly in Oriental final syllables, as, Ferid-ud-din |
| j | gem, genius |
| kw | quaint, quite |
| ṅ | Fr. nasal *m* or *n*, as in *embonpoint, Jean, temps* |
| ñ | Span. *ñ*, as in *cañon* (cän'yŏn), *piñon* (pēn'yŏn) |
| ng | mingle, singing |
| nk | bank, ink |
| ō | no, open |
| o or ŏ | not, on |
| ô | corn, nor |
| ȯ | atom, symbol |
| ọ | book, look |
| oi | oil, soil; also Ger. *eu*, as in *beutel* |
| ō or oo | fool, rule |
| ou or ow | allow, bowsprit |
| s | satisfy, sauce |
| sh | show, sure |
| th | thick, thin |
| ṯh | father, thither |
| ū | mute, use |
| u or ŭ | but, us |
| u̇ | pull, put |
| ü | between u and e, as in Fr. *sur*, Ger. *Müller* |
| v | of, very |
| y | (consonantal) yes, young |
| z | pleasant, rose |
| zh | azure, pleasure |
| ′(prime), ″(secondary) | accents, to indicate syllabic stress |

# THE ENCYCLOPEDIA AMERICANA

# B

**B**, the second character in our alphabet, holds the same relative place in the alphabet of all European languages except the Russian and two or three others, as Serbian and Bulgarian: in these alphabets the symbol B holds the third place, yet it stands not for our mute B but for a labial (not denti-labial) V or W; while in the second place stands a modified form of B with the same phonetic value as our B. The Russian alphabet is derived from the scheme of the monk Cyril, one of the first evangelists of Bulgaria, who translated into the language of the Sclavonians parts of the Bible. To do this it was necessary to contrive new characters for designation of sounds alien to the Greek language and to modify existing Greek characters. But as in his time, — the 9th century,— and at a much earlier date, the current phonetic value of B was, as it still is, labial V, Cyril retained the symbol B as representing that V sound, while for the mute labial B he devised the symbol b. With this exception the character B has from immemorial time held the second place in the alphabets of all the Aryan languages of Europe, as well as in Hebrew and Aramaic, Phœnician, Arabic and Coptic. The most ancient form of this symbol, both in Greek and Latin, was B, with two angular loops, which were afterward rounded. The most ancient form of the symbol B among the Phœnicians was not unlike the Arabic figure 9, namely, ٩. The Greeks not only added a second loop but they reversed the position of the loop by setting it on the right of the upright stem; and they similarly transposed the loop of the Phœnician sign ϙ which they made P (rho, our R). The difference between the two labials B and P is that P is an absolute mute, in pronouncing which the voice is completely obstructed before the lips are drawn apart, while B is sonant, though the lips be still compressed: in the effort to pronounce B the voice is heard even before the lips are parted; but in pronouncing P no sound is heard while the lips are compressed; and when they are opened there is emission of breath but no voice. B and P substitute each other in words common to two or more languages and in transmutations of words within one language. Examples: Latin pila is English and German ball. Bretzel is commonly pronounced pretzel; but it is of the same origin as the English word bracelet, from Latin brachiale, an armlet, bracelet; and bretzel means also handcuffs. B is nearly allied also to F, Th, V and W; thus beech (German buche) is represented in Greek by phegos and in Latin by fagus; whale is from the same source as Greek phalaina and Latin balæna; habere in Latin becomes in French avoir; caballus, Latin, is French cheval; German Liebe, English love; Latin labium, French lèvre. V and B are little discriminated in Spanish and we have in one of the epigrams of Martial proof that in his day natives of Vasconia (Navarre) pronounced B as V and vice-versa when he wittily scores the bibulous habits of that people by saying that for them not without reason vivere (to live) is bibere (to drink): so that one of that nature might say vivimus ut bibamus, and the meaning would be either, we live to drink or we drink to live. In the Roman catacombs in sepulchral inscriptions of the 2d and 3d centures of our era, vixit (lived), is in very many instances written bixit; and the name of a virgin martyr of that age is written Bibiana and that form is retained in the Roman martyrology instead of the correct form Viviana.

B is used also as a symbol and in abbreviations. In chemistry B stands for *boron*, one of the elements. In music B denotes the seventh or leading tone of the diatonic scale of C. In nautical charts *b* signifies a "blue sky." In academic degrees B. is an abbreviation of Baccalaureus, Bachelor. See GRIMM'S LAW; PHILOLOGY; PHONETICS. Consult Petrie, 'The Formation of the Alphabet' (London 1912); Prou, 'Manuel de paléographie' (3d ed., Paris 1910) and Thompson, E. M., 'Introduction to Greek and Latin Palæography' (Oxford 1912).

**B. A. C.**, the abbreviation used by astronomers in referring to 'The Catalogue of Stars of the British Association for the Advancement of Science,' by Francis Baily, London, 1845.

**BAADER**, bä'dėr, **Benedict Franz Xaver von**, German Roman Catholic theologian and philosopher: b. Munich, 27 March 1765; d. there, 21 May 1841. He was the third son of the court physician to the Elector of Bavaria. He studied medicine at Ingolstadt and Vienna, and was graduated in 1784. He assisted his father in medicine, but soon gave up its practice to study engineering in the mining regions. He resided in England in 1791–96, and there became acquainted with rationalistic philosophy,

which did not appeal to him. He became deeply interested in the religious speculations of Eckhart, Saint Martin and Böhme, and was the intimate of Jacobi, and, for a time, of Schelling. He was appointed consulting engineer of the Bavarian mines in 1796 and soon after won a prize for his discovery that Glauber's salt might be substituted for potash in the manufacture of glass. For his valuable services he was ennobled in 1813, and was superintendent of mines in 1817–20. His 'Fermenta Cognitionis' (1822–25) combats modern philosophy and advocates that of Böhme. Baader became professor of philosophy and speculative theology in the new University of Munich in 1826. In 1838 his opposition to Roman Catholic interference in civil matters led to his interdiction preventing him from lecturing again. He severely criticised the papacy and advocated its abolition, but recanted before his death. He is considered the greatest speculative Roman Catholic theologian of modern times and his influence has exceeded the bounds of his Church. His works, together with a biography by F. Hoffman, were published at Leipzig (16 vols., 1851–60). Consult Claason, J., 'Franz von Baader's Leben und theosophische Werke als Inbegriff christlicher Philosophie: Vollständiger, wortgetreuer Auszug in geordneten Einzelsätzen' (Stuttgart 1886–87); Welzer and Welte, 'Kirchenlexikon' (Vol. I, Freiburg 1877).

**BAAL**, bā-ăl, a primitive title of divinities which is found among all branches of the Semitic race, originally signifying "owner" or "possessor." In its primary sense the husband was the "baal" of the wife, the "proprietor," the "baal" of his field. As a title of divinity its application is entirely secondary, the "baal" in this sense having the same meaning as the other, and probably the possessor also of some attribute. Baals were as numerous as the objects or places or cities which they inhabited. There were baals of springs, trees, animals, mountains, stones and sanctuaries, as well as celestial baals, baals of the sky, of one or other of the heavenly bodies, or of some atmospheric phenomenon. The belief was strong among all Semitic races, as among all primitive and ancient peoples, that every natural object that could do something, or was supposed to be able to do something, should be reverenced as divine. In Canaan and Phœnicia, in Syria and south Arabia, in Asia Minor and Mesopotamia, and also among the Greeks and Romans baal-cults sprang up. Mythologists and students of comparative religions were for long inclined to the view that "Baal" is identical with the sun-god — the Bel or Belas of the Babylonians and Assyrians. According to Hastings' 'Dictionary of Religion and Ethics,' while it is admitted that the sun was worshipped as a baal, identification of baal as the sun-god "is without scientific foundation." "Except in late theological abstraction, there is no such thing as a god Baal."

After the Israelites had been brought out of Egypt, and had conquered Canaan, the rural districts were chiefly occupied by the invaders, and the cities remained in the hands of the original inhabitants. In process of time race assimilation began, and with it the taking over of the local baals or gods. The domestication of baal-worship among the inhabitants is attested by the frequency with which the word baal appears as a component part of the names of towns and cities, as Baalath, Baal-meon, Baol-peor and Baal-tamar. Concurrently with Jahweh, the national god, the local baals were worshipped; indeed Jahweh appears to have been worshipped as a baal. The national unity was thus endangered, the people splitting up into small communities and worshipping the local deities. The rapid development of the Philistine power awakened consciousness of this peril; the absorption of baal-worship in that of Jahweh began. When King Ahab established the worship of his wife's deity, Melkart, the baal of Tyre, Elijah took issue, thundered his denunciations of the worship of Jahweh and Melkart as mutually exclusive, and sought to free the former of its foreign elements and accretions. The Old Testament records the history of the chosen people as a series of backslidings to the local baals of the land, alternating with penitences and return to the worship of Jahweh. The prophets of the 8th and 7th centuries continued Elijah's work of purging, Jerusalem became the recognized sole sanctuary for the worship of Jahweh, and during the Persian period baal worship disappeared.

Mythologists who regarded Baal as synonymous with the sun-god, associated his worship as having prevailed through ancient Scandinavia, and it is supposed to have been general in the British Isles. In Ireland and in some parts of Scotland Beltain (1 May O. S.) was one of the festival days. In the former country fires were made early on the tops of the hills, and all cattle were made to pass through them. This fumigation was supposed to guard them against disease for that year. In Sir John Sinclair's 'Statistical Account of Scotland' he describes the ceremonies observed in that country.

**BAALBEK**, băl'bĕk, a ruined city in Syria, on the lower slope of the Antilibanus, 3,839 feet above sea-level, 40 miles from Damascus, famous for its magnificent ruins. Irregular in form, and encompassed by a wall two miles in circumference, it was once the most magnificent of Syrian cities, and is the Heliopolis of the Graeco-Roman world. Of its ruins, the chief is the temple of the Sun, built either by Antonius Pius or by Septimius Severus; a rectangular building 290 by 160 feet. Some of the blocks used in its construction are 60 feet long by 13 thick; and its 54 columns, of which six are still standing, were 72 feet high and 22 in circumference. Near it is a temple of Jupiter, of smaller size, though still larger than the Parthenon at Athens, which has been described as "at once the most perfect and the most magnificent monument of ancient art in Syria." Standing in the village of Baalbek — now a cluster of mean dwellings — 300 yards from the other buildings, is a circular temple containing six columns in the mixed Ionian and Grecian style. The quarries from which the temples were reared are in the immediate vicinity. Originally a centre of the sun-worship, it became a Roman colony under Julius Cæsar, was garrisoned by Augustus and under Trajan acquired renown as the seat of an oracle. Under Constantine its temples became churches, but

after being sacked by the Arabs in 748, and more completely pillaged by Tamerlane in 1401, it sank into hopeless decay. The work of destruction was completed by an earthquake in 1759. The Prussian government began important excavations in 1902. Consult Baedeker, 'Syria and Palestine'; Frauberger, 'Die Akropolis von Baalbek' (1802); Murray's 'Handbook to Syria and Palestine'; Puchstein, in 'Jahrbuch des deutschen Archæologischen Instituts' (Berlin 1902); 'Führer durch die Rupinen von Baalbek' (Berlin 1905); Thompson, W. M., 'The Land and the Book' (Vol. III, New York 1886); Wood and Dawkins, 'The Ruins of Baalbek' (London 1757).

**BAANITES,** bā-ă-nīts. See RELIGIOUS SECTS.

**BAAR,** bär, a plateau in Germany, in Baden and Würtemberg, formerly constituting a county of the Fürstenberg principality. It contains the sources of the Danube.

**BAB BALLADS, The.** The 'Bab Ballads' by W. S. Gilbert, the most famous of British light opera librettists, is one of the most popular collections of humorous and gently satiric verses in the English language. At first published in the sixties in *Fun* and collected from time to time in book form with additions, the ballads in their final editions contain also many of the songs from such well-known operas as 'Pinafore,' 'The Gondolier' and 'The Mikado.' About 170 titles comprise the collection, which is also enlivened by Gilbert's humorous drawings.

In general the humor of the ballads lies in odd and nonsensical situations and is enhanced by an unfailing wit and a buoyant mastery of rhyme and meter. Good examples are such masterpieces as 'General John,' 'Ferdinando and Elvira,' 'Lorenzo de Lardi,' 'Babette's Love' and the well-known 'Yarn of the Nancy Bell.' In addition to these, many of the ballads are also satirical in a very mild and good-humored way. "His foe was folly and his weapon wit," reads the inscription on the memorial to Gilbert, and a large number of follies, affectations and oddities current among his countrymen are handled in light nonsensical vein, but never with ridicule or indignation. Characteristic of this group are 'The Englishmen,' 'The Disagreeable Man,' 'Bob Polter,' 'The Æsthete,' 'To the Terrestrial Globe' and 'Etiquette.' The mildly satirical turn is perhaps best illustrated in the well-known first lord's song from 'Pinafore,' "When I was a lad I served a term," but the satirical touch, as well as the purely humorous attitude, is in nearly all the poems.

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**BAB-EL-MANDEB,** băb'ĕl-măn'dĕb (Arabic, the gate of tears, so called from the danger arising to small vessels from strong currents), the name of the strait between Arabia and the continent of Africa, by which the Red Sea is connected with the Gulf of Aden and the Indian Ocean. The Arabian Peninsula here throws out a cape, bearing the same name as the strait, rising to the height of 865 feet. About 20 miles distant stands the wall-like coast of Africa, rising in Râs-es-Sean to the height of over 400 feet. Within the strait, but nearer to Arabia, lies the bare, rocky island of Perim, since 1857 occupied by the British as a fort; its guns commanded the entrance to the Red Sea. The strait on the east side of this island is called the Little Strait, and that on the west the Great Strait.

**BABA,** bä'bą (the old), in Slavonic mythology, a thunder-witch (the devil's grandmother), represented as a little, ugly old woman, with a monstrous nose, long teeth and disheveled hair, flying through the sky in an iron cauldron. By the Czechs she is called now the iron, now the golden, Baba. It is also a Turkish word signifying father, originating, like our word papa, in the first efforts of children to speak. In Persia and Turkey it is prefixed as a title of honor to the names of ecclesiastics of distinction, especially of such as devote themselves to an ascetic life; it is often affixed in courtesy, also, to the names of other persons, as Ali-Baba. A cape near the northwest point of Asia Minor is known as Baba.

**BABA BUDAN,** bä'bą boo'dăn, a spur of the West Ghâts, Mysore, India, extending east for 15 miles, leaving a narrow opening at its west end for the passage of the Bhadra, and then south in an unbroken line for 20 miles, enclosing between itself and the main chain of the Ghâts a rich, but unhealthy, valley. To this spur belong three peaks above 6,000 feet high, among these Mulaina-giri, 6,317 feet, the highest in the West Ghâts. On the slopes of Kalhatti, one of these peaks, is a hill station, a resort of Europeans during the heat. Coffee was first planted in India on another part of this spur toward the close of the 17th century, by a Mohammedan saint named Bâba Búdan.

**BABADAGH,** bä'bą-dăH', Rumania, town in the district of Tultcha, in the Dobrudja, 31 miles southwest of Ismail. It is situated in a marshy district and has considerable commerce with the ports of the Euxine through the port of Kara-Herman. Sheep are raised in the district and the wool trade is considerable. The town was founded by Bajazet I, who peopled it with Tatars and named it after a saint, to whose tomb in the neighborhood pilgrims flock annually. Pop. about 3,000.

**BABBAGE, Charles,** English mathematician and inventor of a calculating machine: b. near Teignmouth, England, 26 Dec. 1792; d. 18 Oct. 1871. He graduated at Peterhouse College, Cambridge. Being in possession of an independent fortune, Babbage was in a position to devote all his time and energies to his favorite studies — mathematics and mechanics. In 1822 we find him broaching the idea of a difference engine, by which intricate arithmetical calculations could be correctly and rapidly performed. Through the recommendation of the Royal Society he received, in 1823, a grant from the government of £1,500 for the construction of such a machine. After a series of experiments lasting eight years and an expenditure of £17,000 (£6,000 of which was sunk by the originator of the scheme, the balance voted by the government), Babbage abandoned the undertaking in favor of a much more complicated work, an analytical engine, worked with cards

like the Jacquard loom. The government, alarmed at the probable demands, refused to support Babbage in his new adventure, and as a quarrel ensued with his engineer, who withdrew his tools, the pet project was never completed. The machine, along with some 400 or 500 plans, was presented in 1843 to King's College Museum, London. Among the many treatises he published on subjects connected with mathematics and mechanics, the most valuable and interesting are 'On the Economy of Machinery and Manufactures'; 'The Decline of Science'; and an autobiographic sketch, 'Passages in the Life of a Philosopher.' In 1828 he was appointed Lucasian professor of mathematics in his university, an office he held for 11 years without, however, delivering lectures. He was one of the founders of the Royal Astronomical and Statistical Societies.

**BABBITT, Irving,** American educator: b. Dayton, Ohio, 2 Aug. 1865. He was graduated at Harvard University in 1889 and studied in Paris in 1891–92. He was instructor in romance languages at Williams College 1893–94 and in the latter year was appointed instructor in French at Harvard, becoming assistant professor in 1902 and professor in 1912. He is a member of the Modern Language Association and has published 'Literature and the American College' (1908); 'The New Laocoön' (1910); 'The Masters of Modern French Criticism' (1912). He edited Taine's 'Introduction à l'histoire de la littérature anglaise' (1898); Renan's 'Souvenirs d'enfance et de jeunesse' (1902); Voltaire's 'Zadig' (1905); and Racine's 'Phèdre' (1910). He is a frequent contributor to magazines and reviews on literary topics.

**BABBITT, Isaac,** American inventor: b. Taunton, Mass., 26 July 1799; d. 26 May 1862. He learned the goldsmith's trade; early became interested in the production of alloys; and in 1824 manufactured the first britannia ware in the United States. In 1839 he discovered the well-known anti-friction metal which bears his name, Babbitt metal (q.v.). For this discovery the Massachusetts Charitable Mechanics' Association awarded him a gold medal in 1841 and subsequently Congress voted him $20,000. Babbitt founded the well-known soap works bearing his name.

**BABBITT METAL,** an alloy of copper, tin and antimony, invented and patented in 1839, by Isaac Babbitt (q.v.) of Boston. It is soft and nearly white and is widely used as an anti-friction metal. The proportions of the constituent metals vary considerably in modern practice. Babbitt's original alloy contained 24 parts of tin, 4 parts of copper and 8 parts of antimony. Many engineers prefer a larger proportion of tin and the following mixture is recommended as giving a tough and very serviceable metal: Tin, 96 parts; copper, 4 parts; antimony, 8 parts. Lead is also added in many cases on account of its cheapness. In small amounts it is not usually objectionable, but the Babbitt metal that is sold in the market, ready-mixed, usually contains a considerably larger proportion of lead than its price would indicate. The alloy is usually melted and run, while fluid, directly into the bearings on which it is to be used, a space from an eighth to half an inch thick being left for it between the box and the shaft that is to be supported.

**BABCOCK, Earle Jay,** American educator: b. Saint Charles, Minn., 11 June 1865. After considerable work with the United States Geological Survey he was appointed in 1902 director of the State School of Mines of North Dakota, professor of chemistry and geology and in 1898 dean of the College of Mining Engineering, University of North Dakota. He is the author of many special scientific articles and of geological reports.

**BABCOCK, James Francis,** American chemist: b. Boston, 23 Feb. 1844; d. Dorchester, Mass., 20 July 1897. He studied at Lawrence Scientific School and became an analytical chemist and chemical expert. He was State assayer and inspector of liquors in Massachusetts, 1875–85, and city inspector of milk in Boston, 1885–89. While State assayer he brought about the insertion in the liquor statutes of the definition of the term «intoxicating liquor,» known as the 3-per-cent limit. He is the inventor of the fire extinguisher which bears his name; a popular lecturer on scientific subjects; appeared as an expert chemical witness in important trials; and published several reports on sanitation and the chemistry of food.

**BABCOCK, Maltbie Davenport,** American Presbyterian clergyman: b. Syracuse, N. Y., 3 Aug. 1858; d. Naples, Italy, 18 May 1901. He was graduated at Syracuse University in 1879 and Auburn Theological Seminary in 1883. He filled most successful and popular pastorates at Lockport, N. Y., Baltimore, Md., and at the Brick Presbyterian Church in New York. While on a visit to the Levant in 1901 he was seized with the Mediterranean fever and died in the International Hospital at Naples. A posthumous volume of his prose and verse, edited by his wife, appeared in 1901, entitled 'Thoughts for Every-Day Living' (New York 1901). Consult his life by Robinson (New York 1904) and Stone, 'Footsteps in a Parish' (ib. 1908).

**BABCOCK, Orville E.,** American military officer: b. Franklin, Vt., 25 Dec. 1835; drowned at Mosquito Inlet, Fla., 2 June 1884. He served with distinction in the Civil War, was a member of General Grant's staff and was made a brigadier-general of the regular army at the close of the war for «gallant and meritorious service.» When Grant was elected President, Babcock became his private secretary, and the superintending engineer of several important public works. He was indicted in 1876 for taking part in revenue frauds, but on his trial was acquitted.

**BABCOCK, Stephen Moulton,** American educator: b. Bridgewater, N. Y., 22 Oct. 1843. He was graduated at Tufts College in 1866; studied at Rensselaer Polytechnic Institute, Cornell University and Göttingen, Germany, where he received the degree Ph.D. in 1879; and LL.D. at Tufts 1901; instructor at Cornell 1875–77 and 1881–82; chief chemist to the New York Agricultural Experiment Station 1882–88; professor of agricultural chemistry, and chief chemist at the Agricultural Experiment Station,

University of Wisconsin, 1888–1913; emeritus professor University of Wisconsin, since 1913. Assistant director Wisconsin Agricultural Experiment Station 1900–13. He has given special attention to the chemistry of milk and its products, and has contributed many articles relating to dairy problems to the annual reports of the New York and Wisconsin Agricultural Experiment Stations; was awarded the Grand Prize at the Paris Exposition in 1900 and also at the Saint Louis Exposition in 1904, for the milk test that bears his name. He is joint author with G. C. Caldwell of 'A Manual of Qualitative Chemical Analysis.'

**BABCOCK, Washington Irving,** American naval architect and shipbuilder: b. Stonington, Conn., 26 Sept. 1858. He was graduated at the Brooklyn Polytechnic Institute in 1876, and at Rensselaer Polytechnic Institute in 1878. He was employed at the Roach Shipyard, Chester, Pa., in 1878–85, with the Providence and Stonington Steamship Company, New York, in 1885–87; was superintendent of the Union Dry Dock Company, Buffalo, N. Y., in 1887–89; manager of the Chicago Shipbuilding Company. in 1889–99, becoming president of the latter in 1900. He is a member of societies of naval architects at home and abroad, and also of several clubs of professional engineers and marine architects.

**BABCOCK, Winnifred Eaton** ("ONOTO WATANNA"), American author: b. Nagasaki, Japan, 1879. She was educated at Montreal, Canada, and at Columbia University, New York. In 1901 she was married to Bertrand W. Babcock. Since 1893 she has written many short stories for leading magazines. Her first story, 'A Poor Devil,' appeared as a serial in the *Metropolitan Magazine* of Montreal. She went to the West Indies in 1895 and worked as general writer and reporter on the Jamaica *News Letter*. Her first Japanese stories and a serial, 'The Old Jinrikisha,' appeared in *Conkey's Magazine* in 1895. She also contributed serials and short stories to the *Women's Home Companion; Good Housekeeping; The Eclectic; The Ladies' Home Journal; Saturday Evening Post*, etc. Her published volumes include 'Miss Numè of Japan' (1899); 'A Japanese Nightingale' (1901); 'Wooing of Wistaria' (1902); 'Heart of Hyacinth' (1903); 'Daughters of Nijo' (1904); 'Love of Azalea' (1904); 'A Japanese Blossom' (1906); 'Diary of Delia' (1908); 'Tama' (1910); 'The Honorable Miss Moonlight' (1912); 'Chinese-Japanese Cook-Book' (1914), with Sara Bosse.

**BABEL, Tower of,** the name of a structure in the Plain of Shinar, Mesopotamia. According to the 11th chapter of Genesis, it was begun by the descendants of Noah subsequent to the deluge, but not allowed to proceed to completion. It has commonly been identified with the great temple of Belus or Bel, one of the chief edifices in Babylon, and the huge mound called Birs Nimrud is generally regarded as its site, though another mound, which to this day bears the name of Babil, has been assigned by some as its site. Babel means literally "gate of God." The meaning "confusion" assigned to it in the Bible really belongs to a word of similar form. See BABYLON.

**BABENBERG,** bä'bĕn-bĕrg, a princely Franconian family, whose castle occupied the site of the later Bamberg Cathedral in northern Bavaria. They were most prominent in the wars of the 10th century. The Austrian dynasty of 976–1246 was formerly believed to be sprung from them.

**BABER,** bā'bėr (or "The Tiger"), the historical surname of Zehir-ed-din-Mohammed, the conqueror of Hindustan and founder of the so-called Mogul dynasty: b. 14 Feb. 1483; d. 26 Dec. 1530. Baber was of mixed Turkish and Mongol origin, but in feeling as in personal characteristics he was a Tartar (Turk), and often in his memoirs speaks most contemptuously of Mongols or Moguls. Yet Hindu ignorance has designated the throne which he established in India as that of the Great Mogul. At the age of 12, on his father's death, he ascended the insecure throne of Ferghana in Turkestan; soon after he was attacked on all sides by his uncles and other neighboring princes, which obliged him, in his turn, to assume the aggressive. Accordingly, at the age of 15, Baber seized on Samarcand, the capital of Timour, but, while thus engaged, a revolution at home deprived him of his sovereignty. After many years of an adventurous and romantic career, he raised an army, entered Hindustan, and was met by Ibrahim, the ruling Sultan of that country. The two armies fought the battle of Paniput, which decided the fate of India, on 21 April 1526. Baber, with his army of 12,000 men, completely overthrew that of Ibrahim, numbering 100,000, and entered Delhi in triumph. Difficulties and fresh foes had still to be encountered and mastered but in the battle of Sakri, in February 1527, Baber utterly defeated the opposing Hindu princes, and then proclaimed himself Padishah, or Emperor of Hindustan. Brilliant as a military leader, he was also an enlightened ruler, introduced important reforms in his dominions and had a taste for science and art. Consult his own 'Memoirs' translated by Leyden and Erskine (London 1844), and 'Lives' by Caldecott (London 1844) and Lane-Poole (London 1899).

**BABES IN THE WOOD,** a nursery tale and ballad of unknown origin, found in Percy's 'Reliques' and other collections. Two children are left to perish in the forest by a relative who hopes to profit by their death. See CHILDREN IN THE WOOD.

**BABEUF,** bá-bėf', or **BABŒUF, François Noël,** French communist, who called himself Caius Gracchus: b. Saint-Quentin 1760; d. 28 May 1797. He founded in Paris a journal called the *Tribune of the People* (1794), in which he advocated his system of communism, known as Babœuvism, and contemplating absolute equality and community of property. His followers were called Babœuvists. Betrayed in a conspiracy against the Directory, aiming to put his theories into practice he was guillotined in Paris. His principal works were 'Perpetual Register of the Survey of Lands' (1780), and 'Of the System of Population' (1794). See Advielle, 'Histoire de Babeuf et du Babouvisme' (1884).

**BÂBI,** bä'bę, the name of a modern Persian sect, derived from the title, Bâb-ed-Din (gate

of the faith), assumed by its founder, Mirza Ali Mohammed, a native of Shiraz, who in 1843 undertook to establish a new religion from a mixture of Mohammedan, Christian, Jewish and Parsee elements. His controversies with the *mollahs* shortly led to his confinement to his own house, where he formulated his doctrines, privately instructed his disciples and increased his pretensions. The sect soon became numerous; but on the accession of Nasir-ed-Din in 1848, apprehending persecution, they took up arms, proclaiming the advent of the Bâb as universal sovereign. The insurgents were reduced by famine, and most of them executed (1849–50). The Bâb had held aloof from the revolt, but was arrested and put to death, after a long imprisonment, in 1850. His successor was recognized in the youthful son of the governor of Teheran, who retired to Bagdad, where he afterward lived quietly. An attempt of three believers to assassinate the Shah, in 1852, led to a persecution of the sect; numbers were tortured and burned, among them Gurred-ul-Ain. Bâbism is at present widely diffused in Persia; its members live in apparent conformity to orthodox Mohammedanism, but privately holding in Bâb's doctrines, which are contained in an Arabic treatise, 'Biyan' (the exposition), written by the founder himself. They form essentially a system of Pantheism, with Gnostic and Buddhistic additions. All beings are emanations from the Deity, by whom they will ultimately be reabsorbed. Bâbism enjoins few prayers, and those only on fixed occasions; encourages hospitality and charity; prohibits polygamy, concubinage and divorce; discourages asceticism and mendicancy; and directs women to discard the veil, and share as equals in the intercourse of social life. (See BAHISM). Consult Andreas, 'Die Babis in Persien' (Leipzig 1896); Browne, 'A Traveler's Narrative' Written to Illustrate the Episode of the Bâb (Cambridge 1892); Beha-Ullah, 'Les Preceptes du Béhaisme' (Paris 1906); Huart, 'La religion de Bab' (ib., 1889); Dreyfus, 'Essai sur le Béhaisme' (ib., 1909); Mirzá Huseyn, 'Le Béyân arabe le livre sacré du Babysme' (Paris 1905); Phelps, 'Life and Teachings of Abbas Effendi' (New York 1903).

**BABINGTON, Anthony,** English Roman Catholic conspirator: b. Dethick, Derbyshire, 1561; d. 20 Sept. 1586. His father died when he was 10 years of age, leaving him ample estates. He founded in 1580 a society for the protection of the Jesuit missionaries in England, and served for a time as page to Mary Queen of Scots, then a prisoner in England. With Ballard, a Jesuit, and other Catholic emissaries, he formed, in 1586, a plot for the murder of Queen Elizabeth, the rescue of Mary and the re-establishment of the Catholic religion in England. In the working out of the plot Babington behaved with indiscretion prompted by his vanity; he sent letters to Mary, and in reply the imprisoned Queen approved of the plot. Walsingham, Elizabeth's secretary, by means of his spies, had all the correspondence of the conspirators intercepted, copied and sent on to their destinations. Then at the right moment the conspirators were arrested and brought to trial, and among others Babington was executed. Babington's correspondence with Mary in the subsequent trial of that Princess, directly led to her execution in February 1587.

**BABINGTON, Churchill,** English philologist: b. Leicestershire, 11 March 1821; d. 12 Jan. 1889. He was educated at Saint John's College, Cambridge, and was Disney professor of archæology there in 1865–80, and was rector of Cockfield, Suffolk, from 1866 until his death. He was a botanist and ornithologist of high repute, wrote also on archæology and numismatics, and contributed largely to Smith's 'Dictionary of Christian Antiquities.'

**BABINGTONITE,** a native, anhydrous silicate of calcium, iron and manganese, associated with an iron silicate having the composition $Fe_2(SiO_3)_3$. It is greenish-black in color, with a vitreous lustre, and crystallizes in the triclinic system. It occurs in Norway, Italy, and the British Isles, and in the United States has been found at Gouverneur, N. Y., and at Athol, Mass. Its hardness varies from 5.5 to 6, and it has a specific gravity of about 3.36. The mineral was named after Dr. William Babington.

**BABIRUSSA,** băb'ĭ-roo'sa, a wild hog of the East Indies, remarkable for the long, exposed, canine teeth of the male. The upper tusks, instead of growing downward in the usual way, turn and grow upward through the skin on each side of the snout and curve backward until, in old animals, they may be 8 or 10 inches long, and reach nearly to the eye. These hogs, which inhabit Celebes and Borneo, are almost hairless. long-legged and active, and feed upon fallen fruits instead of rooting in the ground. One cannot see that the great tusks are of any present use, but Wallace suggests that they were useful to the ancestors of these pigs under different conditions, and were then kept worn down by service.

**BABISM,** băb'ĭzm. See BABI.

**BABOO,** bā'boo, or **BABU,** a Hindu title of respect equivalent to Sir or Mr. It is usually given to wealthy and educated native gentlemen, especially when of the mercantile class.

**BABOON,** băb-oon', a large, long-haired, terrestrial monkey of Africa or Arabia, belonging to the genus *Cynocephalus,* of the family *Cercopithecidæ.* All are of large size, have elongated, blunt muzzles, with nostrils at the extreme end, and great canine teeth which together give the face, when seen in profile, a dog-like aspect. The naked parts of the face, as well as the great callosities upon the buttocks, are often brilliantly colored. Some also have shaggy manes, and all add to their repulsive appearance a fierceness of disposition which makes them more feared than perhaps is necessary, for they rarely, if ever, have attacked human beings. All of the species go about in troops under the guidance and protection of several old males. They are rare in wooded regions, preferring rocky and bushy districts, like those in northern Africa, in Arabia and in southeastern Africa. As their fore and hind limbs are of nearly equal length, and very stout, they go mostly on all fours, galloping swiftly and climbing rocks with agility. They climb trees with greater difficulty, and generally keep on the ground away from forest regions. Their food is principally vegetable — fruits, berries, young sprouts, etc.; but they also eat

insects, worms, snails and such young birds or small animals as they are able to catch. They do great damage to the plantations of the native Africans, ruthlessly spoiling much more than they are able to eat. The ancient Egyptians seem to have trained them to pick fruits, but within recent times their confinement in menageries, where they live and breed well, is the extent of their domestication. There is nothing attractive about any of them, either in appearance or disposition.

Among the best known is the great Arabian or sacred baboon, or *hamadryad* (*Cynocephalus hamadryas*), the one represented upon Egyptian monuments, and venerated by the primitive Egyptians. It is supposed that their habits of noisy activity at sunrise, as though adoring the sun-god, is the basis of this very ancient form of worship. Mummies of baboons are commonly found in tombs in the Nile Valley; and the species itself is still abundant from the Sudan to southern Arabia. It is ashy gray in color, and has a heavy mane. The great baboon of south Africa, common in the wilder mountains of Cape Colony, is the chacma (*Cynocephalus porcarius*), which is dark-brown and has long hair but no mane, and a tail about half the length of the body, terminated by long, black tufts. This is the one most commonly seen in menageries. The mandril (*Cynocephalus mormon*) is still larger, exceeding a mastiff in size. It has short legs, a mere stump of a tail and an enormous head, with a crest of greenish hair upon the forehead, and a beard which is orange-yellow; while the naked parts of the face consist mainly of a huge nose, light-blue in color, the skin of which is folded into ridges. The naked buttocks are bright scarlet. This ugly brute is one of the most ferocious and justly dreaded animals of the Kongo forests. In the same region lives a second similar species called the drill (*Cynocephalus leucophæus*), which differs mainly in lacking the bright colors and ribs of the nose of the mandril. Several other baboons live in west Africa, but are not well known, although one reddish-brown species, the Guinea baboon (*Cynocephalus sphinx*) is commonly seen in the hands of showmen. A large monkey of southern Abyssinia, looking like a black, clipped French poodle, is substantially a true baboon, although it belongs to another genus; it is the gelada (*Theropithecus gelada*). Consult 'Cassell's Natural History,' Vol. I (1885); Elliot, 'A Review of the Primates' (New York 1913).

**BABRIUS**, a Greek fabulist whose fables in verse are variously referred to the time immediately preceding the Augustan Age, and to the 3d century of our era; his name also shows variants, as Babrias, Gabrius. Till 1842 only a few fragments of Babrius were known to be extant; but in that year, in the Laura of Mount Athos, was discovered a manuscript containing 123 of his fables, now in the British Museum. In 1846 Sir George Cornewall Lewis published them together with the pre-existing fragments, and in 1859 or 1860 appeared a good English version by James Davies. Others, evidently from the same hand, were discovered by Knöll in 1877, and by Van Assendelft in 1891. The fables have also been edited by W. G. Rutherford (London 1883) and by Crusius (Leipzig 1897). Consult Conington, 'Miscellaneous Writings' (Vol. II, London 1872); and Fusci, 'Babriano' (1901).

**BABSON, Roger Ward**, American statistician: b. Gloucester, Mass., 6 July 1875. He was educated at the Massachusetts Institute of Technology. He founded the Babson Statistical Organization of which he became president. It has branch offices in New York, Philadelphia, Chicago and London. He is publisher of 'Moody's Manual of Railroad and Corporation Securities,' vice-president of the Gloucester Safe Deposit and Trust Company, and lecturer on statistics and economics at the Massachusetts Institute of Technology. He is special writer for the Curtis Publishing Company, the New York *Times* and other periodicals. He has published 'Business Barometers' (1909); 'Selected Investments' (1911); 'Bonds and Stocks' (1912); 'Commercial Paper' (1912), with Ralph May; 'The Future of the Working Classes' (1913). He is a fellow of the Royal Statistical Society of London and member of the executive committee of the American Economic Association.

**BABUYANES**, bä'boo-yän'ez, or **MADJICOSIMA ISLANDS**, a number of islands lying about 30 miles north of Luzon, and generally considered the most northern of the Philippines. The chief islands are Kamiguin, area 65 square miles; Babuyan Claro, 38 square miles; Calayán, 30 square miles; Fuga, 21 square miles; and Dalupiri, 20 square miles. Pop. about 12,000.

**BABYLANS** or **BABYLLUS, Saint**, a bishop of Antioch between 237 and 250. He declined to admit to public worship the Emperor Philip, who had murdered his brother Gordianus in order to gain the throne. In the Roman calendar his day is celebrated on 24 January; in the Greek on 4 September.

**BABYLON.** See BABYLONIA.

**BABYLON**, N. Y., village in Suffolk County, Long Island, 37 miles east of New York on Great South Bay, here crossed by steam ferry to Fire Island and Oak Island Beach, and on the Long Island Railroad; popular as a summer resort on account of its fine beach, and as a rendezvous for sportsmen by reason of its opportunities for fishing. The surrounding region is adapted to general farming. Pop. 2,650.

**BABYLONIA.** Discoveries of the recent decades seem to confirm the idea that Babylonia was the cradle of civilization. The country, which is nearly enclosed by the Tigris and Euphrates from Bagdad to the Persian Gulf, is bounded on the north by Mesopotamia; on the east by the plain of Elam; on the south by the Persian Gulf; and on the west by the Arabian desert. It constitutes the largest portion of the country now known as "Irâq el Arabi." A considerable part of this alluvial plain has been made through deposits by the river. This land-making process continues at the present time at the rate of about 70 feet per year.

At one time the plain was covered with a complicated network of canals which carried agricultural prosperity to every part of the land. The neglect of these has changed the conditions of the country so completely that instead of a fertility which was once the wonder of the

ancient world, a cheerless waste now greets the eyes. Some months of the year the country is partially covered with swamps and marshes, while the remaining portion is a desolate plain.

Here and there throughout the land are to be seen mounds of débris, every one of which covers the remains of a long forgotten civilization. About the middle of the last century a number of English explorers, Loftus, Layard and Taylor, visited the ruins of some of the important cities. Through their tentative investigations Niffer (Nippur), Warka (Uruk or Erech), Senkera (Larsa), Muqayyar (Ur), Abu Shahrain (Eridu), besides Babylon, Borsippa and other cities were located. A few decades later Rassam, also an Englishman, discovered that the ruins known as Abu-Habba represented the ancient Sippara; and decided definitely also that Tell-Ibrahim was Kutha (Cutha). The ancient names of most of these cities were known through the Old Testament. For excavations see ASSYRIOLOGY.

The earliest inhabitants of the country, which was known in the early period as Shumer (Biblical Shinar), are called Sumerians.

These Sumerians spoke an agglutinative tongue which belongs to that great unclassifiable group of languages known as Turanian. Clay was principally used as their writing material. The impression made by the stylus upon the soft clay has the appearance of a wedge, for which the Latin word *cuneus* is used; hence cuneiform writing. See ASSYRIOLOGY.

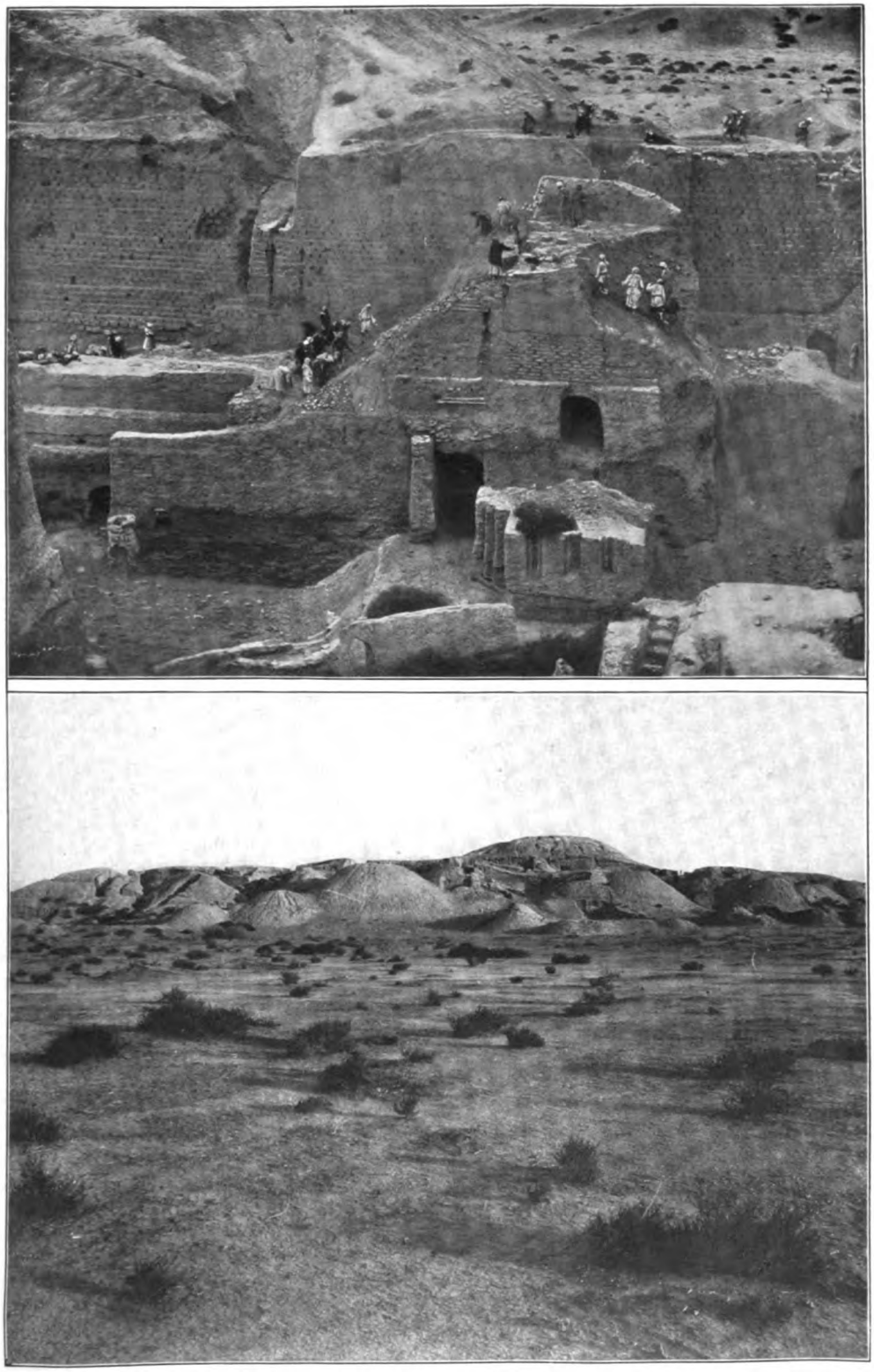
Through other sources, particularly the Babylonian duplicates found in Asurbanipal's library at Nineveh, considerable is known concerning the literature of the Babylonians. Notably might be mentioned the Creation and Gilgamesh epics, the Deluge story, which resemble the Biblical accounts; Ishtar's descent into Hades; the Etana legend; Adapa and the South Wind, etc. Here properly should be mentioned also the codes of laws upon which the decisions of the kings and judges were made, particularly the code of Hammurabi (Amraphel, Gen. xiv), discovered by the French, in Susa, under de Morgan. It consists of 282 laws written on a stela which stands over seven feet high. This had been carried away by the old national enemy of Babylonia, the Elamites. Very extensive also is the knowledge of the customs and manners of the people gained through the thousands of contract tablets dated in the reigns of kings of all periods. Practically every kind of legal and domestic contract imaginable, mortgages, deeds of sale, promissory notes, guarantees, etc., the archives of business firms, notably the Egibi House of Babylon, and the Murashu Sons of Nippur, have been found. Most valuable for the decipherment of the inscriptions have been the syllabaries, or sign lists, in which the different values of characters are given. Commentaries; lists of gods, names, places, temples, animals, stones, etc.; incantations, hymns, penitential psalms, prayers, are included among the tablets discovered.

The earliest inscriptions reveal a polytheism in a developed state. Most of the gods have Sumerian as well as Semitic names. Until the religion of the Sumerians, or of the Semites, prior to their occupation of this country is better known, it will be impossible to ascertain with which people the different gods and religious conceptions originated. The pantheon, which was practically different in every period of Babylonian history, is exceedingly large. Some of the gods mentioned most frequently in the inscriptions are: Anu, Bêl and Ea, the important triad of the early period; Merodach, Shamash, Sin, Ishtar, Nergal, Nebo, Nusku, Ninib, Gula, etc.

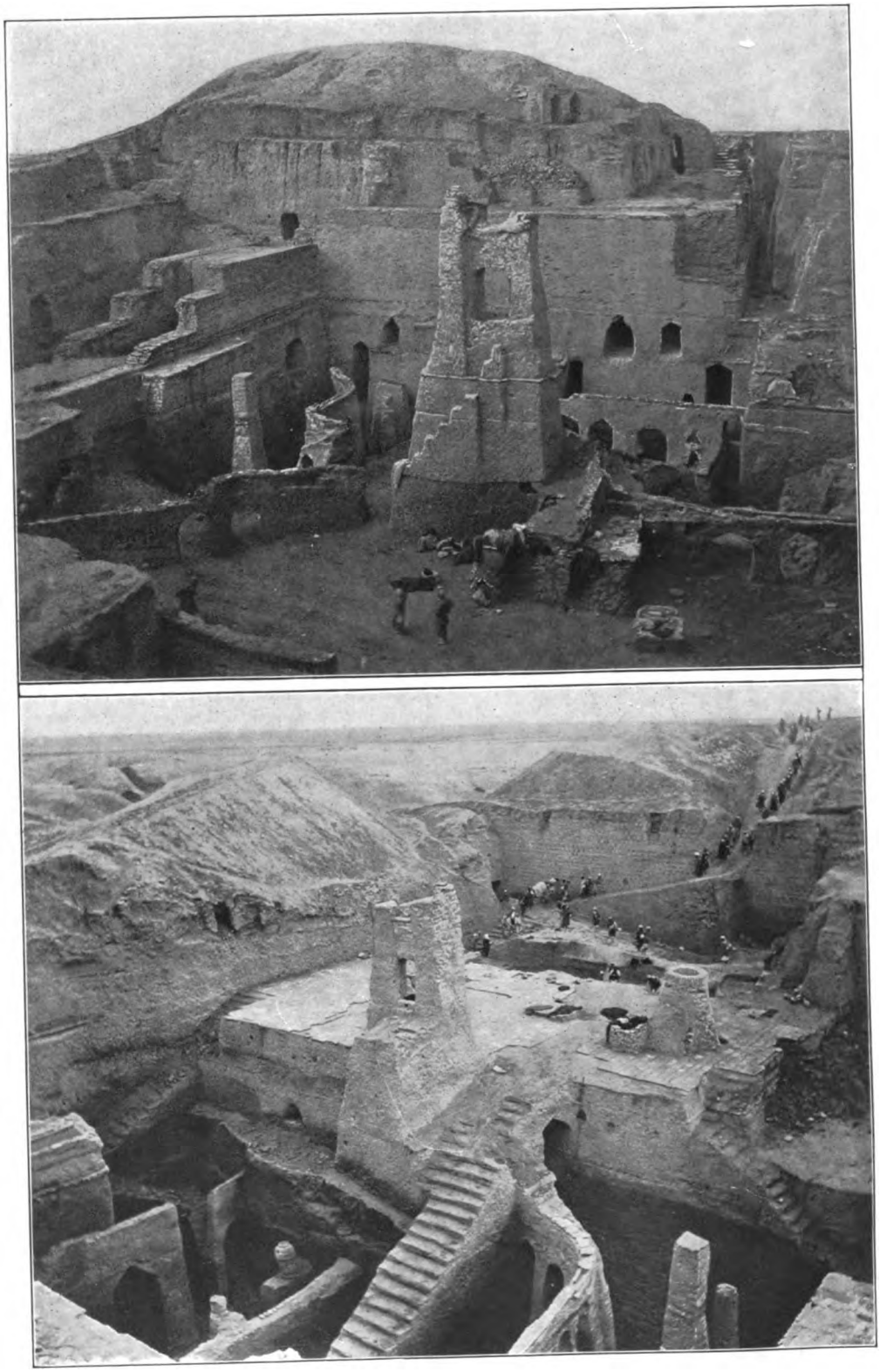
Each city had its temple, which was dedicated to some particular god; for example, Ekur, at Nippur, was sacred to Bêl; Esagila, in Babylon, to Merodach. In addition to the patron deity, shrines to other gods were found in each sanctuary. At Nippur, besides Bêl, 24 other gods were worshipped, for whom shrines were set up within the temple precincts. Through the researches of Professor Hilprecht in the trenches at Nippur, and in connection with the inscriptions discovered, the real conception of a Babylonian temple and its tower is made known for the first time. The temple had an inner and outer court, both of which were nearly square, the latter being somewhat smaller than the former. The prominent feature of the temple architecture was the *ziggurat*, or storied-tower, which occupied nearly one-third of the area of the inner court. In close proximity to the tower stood the temple proper, where the sacrifices were offered. The ziggurat consisted of quadrangular platforms, one superimposed upon the other, on the top of which was to be found the shrine. The number of platforms varied according to the period and ability of the builder. In the 3d millennium B.C. the number generally appears to have been three. The ziggurat had its origin in the earliest pre-Semitic period, when it was regarded as the tomb of the god. At that time it was the central feature of a fire-necropole, or cemetery. The Sumerians cremated their dead. In an early stratum at Nippur one of their crematoriums was found. The remains of the incineration were placed in jars, thousands of which were found buried around the ziggurat. It is not known what the Semites did with their dead, but when they became the dominant people of the land the conception of the temple and ziggurat seems to have been changed, for thereafter no burials are found within the courts of the temple.

In their cosmology the Semitic Babylonian conception of the earth was a mountain over which the god Bêl ruled. This they believed extended down into Ea's region (subterranean waters), and also that it reached up unto that of Anu (Heaven). They regarded the ziggurat as symbolical of the earth, the dominion of Bêl. In their inscriptions, therefore, concerning the building or restorations of these towers, the following expression is repeatedly found: "I laid the foundations of the ziggurat in that breast of the earth and built it up so that its head was in the heavens" (compare the story of Babel, Gen. xi), thus showing that the ziggurat was a representation of Bêl's kingdom, the earth.

In connection with the temple library at Nippur a school or department of instruction was found. Within its rooms were discovered textbooks, and exercises of the students. At Sipara a school similar in character was also found. The complete excavation of all important Babylonian cities will doubtless bring to light a



Upper — Excavating the entrance of the Temple of Bêl, at Nippur, 4500 B. C.
Lower — Mounds covering the Temple of Bêl



Upper — Excavating around the Ziggurrat of the Temple of Bel to virgin soil, 6500 B. C.
Lower — Excavations in the Temple area. Pavement of Ur-Gur, 2700 B. C. Pre-Sargonic strata in the foreground

temple, a library and a school in each. On history see ASSYRIOLOGY.

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**BABYLONIAN EXILE, or CAPTIVITY.** It seems to have been part of the statecraft of the ancient Assyrians to remove the people of conquered nations and plant them in unoccupied parts of the dominion, as far distant as possible from the home country of the victims. This custom grew out of civil and geographical conditions. The degree of national intercourse requisite for maintaining a proper ascendency over the subjugated nation could not be maintained if they were allowed to remain in their own land. Consequently, deportation was necessary — a process which has come to be designated in our language by the word captivity. Anciently, deported nations were not treated with that cruelty we are in the habit of associating with the captive. The captivity of the Jews, who are more especially to be treated in this article, demands the preceding remarks in order to aid in a proper understanding of the frequent notices we find in the Scriptures of the consequence to which these people attained in their foreign residences.

There are two Babylonish captivities of the Jews, having their beginning at different times, although their endings were synchronous. In the civil dissensions following the death of Saul and culminating at the death of Solomon, the tribes north of the mountains of Ephraim and those east of Jordan separated from the rest, leaving Judah and Benjamin in the naturally fortified province of the south. To the north of the revolted tribes lay the kingdom of Syria, then powerful and extensive. Syria had an old feud with Israel ever since David had made Damascus, the Syrian capital, tributary to himself. Rezon had regained the city under Solomon, but was «an adversary to Israel all the days of Solomon.» The attention of Syria was now turned to the defenseless condition of the revolted tribes. They had no longer the fortifications and fastnesses from which David had sallied forth to the northern plains at the foot of the Anti-Lebanon. Judah had, meanwhile, made a treaty, in the reign of Asa, her third King, with the Syrian power, who, by his counsel and stratagem, had been induced to break a former league with Israel (I Kings xv). Judah also, fearing inroads from the north, had built two new fortifications in the passes of Benjamin (Geba and Mizpah), and used all her arts to keep herself in favor with Syria and on the other hand turned her pampered ally against the revolted and unprotected tribes at the north. Israel, tired at length of the continual exposures to Syrian invasion and exasperated at the immunity and prosperity of the rival Judah, formed a conspiracy with Syria (during the reign of Pekah in Israel and Ahaz in Judah) against her southern antagonist. In the emergency Judah appealed to the Assyrian power and Tiglath Pileser came against Israel (733), carried captive a portion of its inhabitants, and then marched upon Syria, slew its king, subdued its capital and absorbed it into the Assyrian empire, from which it reappears only in the time of Alexander the Great. The successor of Pileser, exasperated by an attempted conspiracy of Hoshea with the King of Egypt, took Samaria and subdued Israel to a tributary relation, taking away to Babylon the people whom Pileser had left in the first deportation. Thus was accomplished the first captivity of the numerically most powerful branch of the divided house of Israel (721 B.C.). They were first in the subjugation to foreign power from purely geographical considerations.

A little more than a hundred years after, Judah, from her mountain fastnesses, followed Israel into the Assyrian empire, in the second great Babylonish captivity. Disregarding some chronological differences, Judah seems to have been progressively carried into captivity, like Israel, by at least two, and perhaps three, successive deportations. The first was 598 B.C., and was probably made with the direct object of colonizing the city of Nineveh, which the Assyrian monarch was then endeavoring to restore. The second was in the reign of Zedekiah. Judah had for three successive reigns been heavily tributary to Assyria. Zedekiah rebelled against the tribute and, like Israel, further exasperated her master by calling upon Egypt in her extremity. In revenge, Nebuchadnezzar burnt the temple and city, put out the eyes of Zedekiah and led away the people to Babylon, and so ended the Jewish kingdom (588 B.C.). When, 70 years after the second captivity, the permission to return was given, only a very small part of the Jewish people were in a condition to desire a removal, having become thoroughly naturalized in their foreign dwellings; and even if they had desired it, it would have been only a return to a Medo-Persian satrapy, not to the glory of their ancient kingdom and temple-worship. See DANIEL; EZEKIEL; EZRA; JEWS.

The term «Babylonish Captivity» is frequently applied by writers of Church history to the residence of the Popes at Avignon for nearly 70 years.

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Life after the Exile' (New York 1899); Kent, 'A History of the Jewish People' (New York 1899); Torrey, 'Ezra Studies' (Chicago 1910).

**BACA, The Valley of,** a vale through which the pilgrims had to pass on the way to Zion (Ps. 84–6). It has been variously identified with the Valley of Acher, the Valley of Rephain and with a Sinaitic valley of a similar name. It is also said to have been the last station on the caravan route from the north to Jerusalem. Biblical criticism is uncertain as to whether the Valley of Baca is a real place or only used as an emblem of life intended to teach the lesson that perseverance and trust not only overcome difficulties but turn them into blessings.

**BACACAY,** bą-kā'kī, Philippines, a town in the province of Albay, Luzon island. It is situated on the Gulf of Albay. Pop. about 15,000.

**BACALAO,** bä'ką-lä'ō. See Cod.

**BACARRA,** bą-kär'ra, Philippines, a town of Luzon in the province of Ilocos Norte. Pop. 14,800.

**BACCANARISTS.** See Jesuits.

**BACCARAT,** bä-ką-rą', a town of France, in the department of Meurthe-et-Moselle, 16 miles by rail southeast of Lunéville, having the most important plate glass works in France, established here in 1765. Pop. (1911) 7,277.

**BACCARAT,** a game of Italian origin played with ordinary playing cards; very simple in details and freer from complications than most games at cards. Any number of players may participate and as many packs of cards may be used as necessary, the number being increased to correspond with the number of players. The member of the party selected to act as banker deals out the cards from a box, after they have been shuffled. The face cards in all countries except America, where the face cards and tens have no value and the naturals are 8 and 9, count 10 and the others according to the numbers of their spots. After the bets have been made, the banker deals two cards to each of the players, including himself, but the other players must receive their cards before the banker is served. The aim of players is to make the numbers 9, 19, 29, or as nearly those as possible, as 8, 18 and 28. Any player is at liberty either to "stand" or to be "content" with the two cards at first dealt or to call for more, at the risk of exceeding 29, when his stake is forfeited to the dealer. If, after the first distribution of two cards to each, any player has a "natural,"— that is, a sum making, or next in value, 19,— he declares it wins and the banker pays all who hold superior hands to his own and claims from those holding inferior hands. The players stake their money separately, there being, in fact, as many separate games in progress as there are players and the spectators may wager their money on any one of them, all of which must be accepted by the banker. Prior to the banker making a start, he names the amount of the bank. Any one sitting down at the table has the right to call the whole of the bank, selecting the left or the right on which to pick up the cards. Previous to the banker dealing the cards, it is the duty of two croupiers, one on the right and the other on the left, to count up the stakes deposited on either side and then make up the bank. Thus the banker knows, to the smallest coin, the exact amount of his liabilities.

**BACCHANALIA,** băk'ką-nā'lĭ-ą, feasts in honor of Bacchus, or Dionysos, characterized by licentiousness and revelry and celebrated in ancient Athens. In the processions were bands of Bacchantes of both sexes, who wandered about rioting and dancing. They were clothed in fawn skins, crowned with ivy and bore in their hands *thyrsi*, that is, spears entwined with ivy, or having a pine cone stuck on the point. These feasts passed from the Greeks to the Romans, who celebrated them with still greater dissoluteness till the Senate abolished them, 186 B.C. See Bacchus.

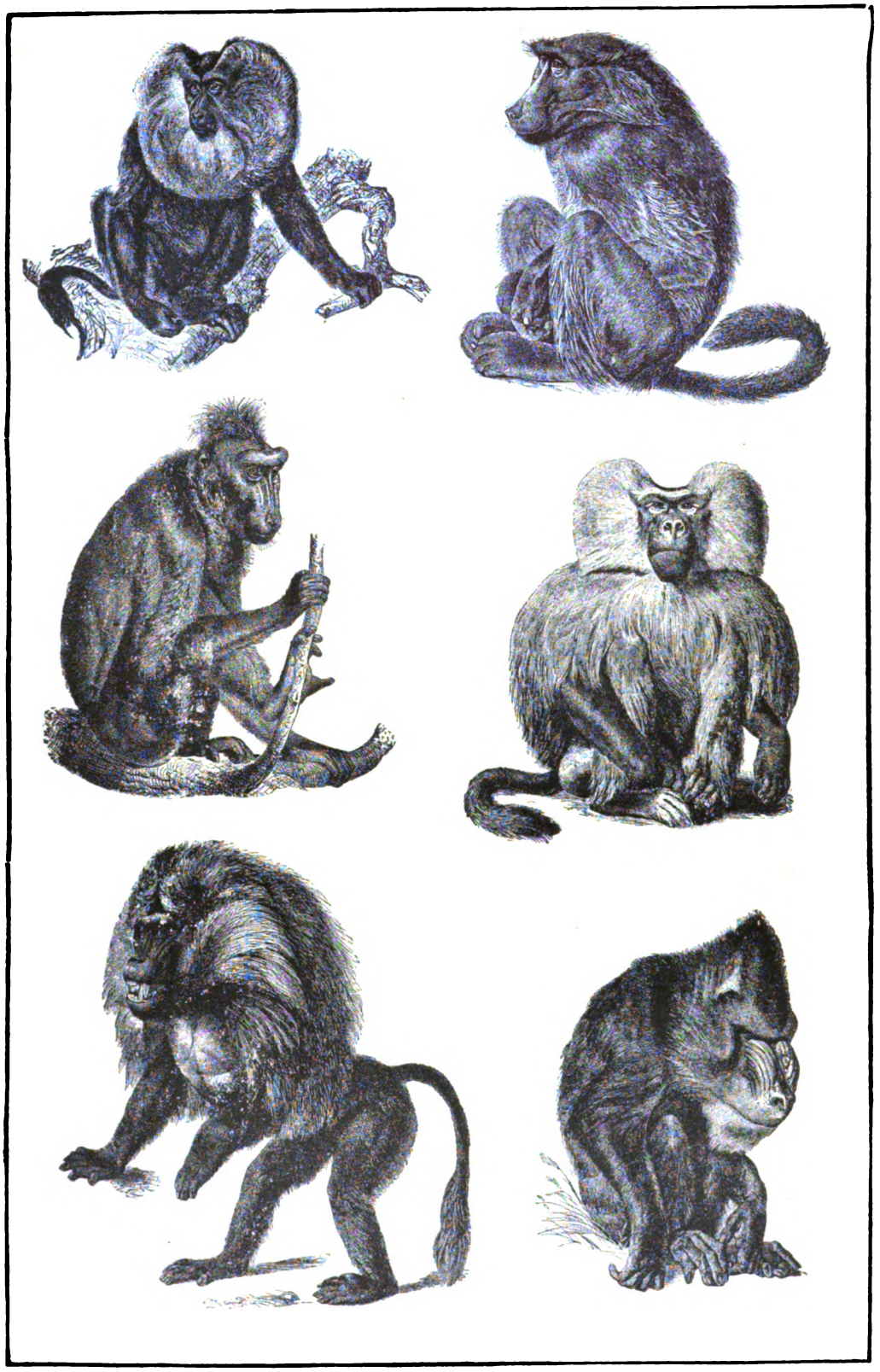
**BACCHANTE,** băk-kăn'tē, a person taking part in revels in honor of Bacchus. The name of several British warships.

**BACCHIGLIONE,** bäk'kę-lyō'nę, a river of northern Italy. It rises in the Alps, passes through the towns of Vicenza and Padua and enters the Adriatic near Chioggia after a course of about 90 miles.

**BACCHUS,** băk'kŭs, or **DIONYSOS,** the god of wine. His history is one of the most perplexing in the Greek mythology. Semele was pregnant with him by Zeus, but became a victim of the craft of Hera. Zeus hastened to save the unborn fruit of his embrace and concealed it till mature in his own thigh. He afterward committed the infant to Hermes, who carried him to the nymphs of Nysa in India, where he grew and prospered. His teacher was Silenus, afterward his constant companion.

In the vales of Nysa Bacchus invented the preparation of a beverage from grapes and taught the planting of vines. To spread the knowledge of his invention he traveled over almost the whole known world and received in every quarter divine honors. Drawn by lions he began his march, which resembled a triumphal pomp, with a great suite of men and women, Sileni, Satyrs and Mænades. Inspired by the presence of the god, rejoicing, brandishing the *thyrsus* and crowned with vines and ivy, they danced around him, shouting "*Evoe! Eleleus!*" over hill and valley, accompanied by the tones of Phrygian flutes and timbrels. The Thebans would not acknowledge his divinity and Pentheus armed himself against him. Bacchus resolved to punish the crime and inspired the women with a fury which drove them from their dwellings to wander on Mount Cithæron. Pentheus himself was torn in pieces by his own mother and her sisters, to whom he appeared a wild beast. Bacchus punished the daughters of Mynias, who derided his feasts, with frenzy and transformation. At Naxos some Tuscan sailors attempted to carry him off to Italy, supposing him from his purple robe to be the son of a king. They fettered him; but the fetters fell off, vines and ivy entwined the vessel and kept it fixed in the midst of the sea: the god transformed himself to a lion and the seamen, seized with madness, leaped into the waves, where they were changed into dolphins. On the other hand, he rewarded such as received him hospitably and rendered him worship, as, for instance, Midas, who restored to him the faithful Silenus.

# BABOONS



1 Bearded Ape (Cynocephalus silenus)
2 Chacma (Cynocephalus porcarius)
3 Tufted Baboon (Cynopithecus niger)
4 Hamadryad (Cynocephalus hamadryas)
5 Gelada (Cynocephalus gelada)
6 Mandrill (Cynocephalus mormon)

His love was shared by several; but Ariadne, whom he found deserted upon Naxos, alone was elevated to the dignity of a wife and became a sharer of his immortality. To confer the same favor on his mother, Semele, he descended into the realms of Pluto and conducted her to Olympus, where she was henceforth called Thyone. In the dreadful war with the giants he fought heroically and saved the gods from impending ruin. During the rejoicing for victory Zeus joyfully cried to him, "*Evan, evoe!*" (Well done, my son!), with which words Bacchus was afterward usually saluted. We find him represented with the round, soft and graceful form of a maiden rather than that of a young man. An ornament peculiar to him is the tiara. His long waving hair is gathered behind in a knot and wreathed with sprigs of ivy and vine leaves. He is usually naked; sometimes he has an ample mantle hung negligently round his shoulders; sometimes a fawn skin hangs across his breast. The earlier bearded Bacchus is properly of Indian or Egyptian origin. His head is sometimes shown with small horns (the symbol of invincible force). In his hand is borne a *thyrsus*, or a drinking cup. The bull, panther, ass and goat were symbolically associated with this god.

The feasts consecrated to Bacchus were termed *Bacchanalia, Dionysia,* or in general *Orgia.* They were celebrated with peculiar solemnity in Athens, where the years were universally reckoned by them and during their continuance the least violence toward a citizen was a capital crime. The great Dionysia were celebrated in spring. The most important part of the celebration was a procession representing the triumph of Bacchus. This was composed of a train of Bacchantes of both sexes, who were masked, clothed in fawn skins, crowned with ivy and bore in their hands drinking cups and rods entwined with ivy (*thyrsi*). Amidst this mad crowd marched in beautiful order the delegated bodies of the *phratria* (corporations of citizens). They bore upon their heads consecrated baskets, which contained first-fruits of every kind, cakes of different shape and various mysterious symbols. This procession was usually in the night-time. The day was devoted to spectacles and other recreations. At a very early hour they went to the theatre of Bacchus, where musical or dramatical performances were exhibited. Thespis, known as the inventor of tragedy, is said to have introduced into the Bacchic performance an actor who carried on a dialogue with the *coryphœus* (leader) regarding the myths narrated of Bacchus or some other divinity. The chorus, surrounding its leader, stood on the steps of the altar of Bacchus, while the actor occupied a table. Some regard this as the origin of the stage. The vintage festivals in rural districts were celebrated by Bacchic processions, ruder in form than those of Athens, but characterized by the same wild license and ribaldry. Coarse ridicule of individuals was a marked feature of these occasions. In the course of time the mysteries celebrated became occasions for intoxication and gross licentiousness. The Bacchanalia were introduced into Rome about 200 B.C. and at first were celebrated by women only. Later men were admitted, evening celebrations introduced and celebrations held frequently instead of only three days in the year as at first. Gross immoralities were practised and finally in 186 B.C. the Senate ordered the arrest of the priests and forbade further meetings in Italy. Consult 'Senatus Consultum de Bacchanalibus' in 'Corpus Inscriptionum Latinarum'; Frazer, 'The Golden Bough' (1913); Farnell, 'Cults of the Greek States' (Vol. V, Oxford 1910); Gruppe, O., 'Griechische Mythologie und Religionsgeschichte' (Vol. II 1907).

**BACCHUS AND ARIADNE,** a painting by Titian (1523). It is founded on the Greek story of the marriage of Dionysius to the wife of Theseus. It represents Ariadne in a background of sedge and ocean turning away as the leopard-drawn chariot descends, bearing the god and surrounded by satyrs. The picture hangs in the National Gallery, London.

**BACCHYLIDES,** bāk-kĭl'ĭ-dēz, Greek poet who flourished about 470 B.C.; a native of Iulis, a town on the Island of Ceos. He was a nephew of the still more famous lyric poet Simonides, with whom he remained for some time at the court of Hiero I in Sicily. He traveled also in the Peloponnesus and is said to have been a rival of Pindar. Until recently this poet was known to the modern world only in fragments of beautiful versification. In 1895, however, a well preserved text was discovered and published and Bacchylides has now taken permanent place as a master of Greek verse. He was master of a style at once perspicuous and simple, tasteful in expression and with an artist's eye for picturesque detail. An English translation of the poems edited by F. G. Kenyon appeared in 1897. Consult also Sir R. Jebb's edition, with introduction, notes, translation and bibliography (1905).

**BACCIOCCHI,** bä-chy'ŏk'kē, **Felice Pasquale,** Corsican captain: b. Corsica, 18 May 1762; d. Bologna, 27 April 1841. In 1797 he married Maria Elisa Bonaparte. In 1805, when Napoleon made his sister Princess of Lucca and Piombino, Bacciocchi was crowned with his wife. After the Emperor's fall he lived quietly and in reduced circumstances at Bologna.

**BACCIOCCHI, Maria Anna Elisa Bonaparte,** the eldest sister of Napoleon Bonaparte: b. Ajaccio, Corsica, 1777; d. 7 Aug. 1820. She married Felice Bacciocchi and was created by her brother in 1805 Princess of Lucca, Piombino Massa and Carrara and in 1809 Grand Duchess of Tuscany. She shared her brother's fall and spent her last years in Austria, dying on her estate near Trieste. Her only son died in 1833 and her only daughter, the Countess Camerata, in 1869.

**BACH,** bäH, **Alexander,** Baron, Austrian statesman: b. Loosdorf, 4 Jan. 1813; d. 15 Nov. 1892. He was Minister of Justice during the troublous period in 1848; of the Interior in 1849–59; and subsequently Ambassador to Rome. In 1855 he negotiated the concordat between Austria and the Roman Church. In 1859–67 he was Ambassador at Rome. As a minister he was an opponent of liberalism and in favor of a strong centralizing policy.

**BACH, Heinrich,** German musician: b. 16 Sept. 1615; d. 10 July 1691. He was the father

of Johann Christoph and Johann Michael Bach; organist at Arnstadt.

**BACH, Johann Christian,** German musician: b. Erfurt 1640; d. 1682. He was a son of Johannes Bach, the great uncle of Johann Sebastian Bach.

**BACH, Johann Christian,** German musician: b. Leipzig 1735; d. 1782. He was a son of Johann Sebastian Bach and was organist in the Cathedral of Milan 1760-62. From the latter year he resided in London and became music master to the Queen. From his residences at Milan and London he is called "the Milanese" and "the English" Bach. The elegance and brilliancy of his pianoforte compositions made him the favorite of amateurs in that instrument; but only in his masses and *Te Deums* are to be heard echoes of the musical genius of his family. Consult M. Schwartz, 'Johann Christian Bach' (Leipzig 1900).

**BACH, Johann Christoph Friedrich,** German musician: b. Leipzig 1732; d. 1795. He was a son of Johann Sebastian Bach and was for a long period music master to Count Schaumburg at Bückeburg.

**BACH, Johann Michael,** German composer and instrument-maker; b. 1648; d. 1694. He was a son of Heinrich Bach and the father-in-law of Johann Sebastian Bach.

**BACH, Johann Sebastian,** German musician and composer: b. Eisenach, 21 March 1685; d. Leipzig, 28 July 1750. Bach was the most profound and original musical thinker the world has ever seen. He is the master of masters; from him most of the great composers have drawn inspiration. When Mozart heard one of his pieces at Leipzig, in 1788, he exclaimed: "Thank Heaven! here at last is something new that I can learn from.' "Not Bach (brook) but 'Ocean' should be his name," Beethoven exclaimed. Mendelssohn made enthusiastic efforts to revive the interest in Bach. Schumann helped to found the Bach Society and urged students, if they would become thorough musicians, to make Bach their daily bread. Chopin confessed that before giving a concert he locked himself up a fortnight with nothing but Bach to play. Franz devoted a great part of his life to adapting this master's works for use in modern concert halls. Liszt and Rubinstein adored and played him. Wagner, as he grew older, played Bach more and more; his vocal compositions he pronounced the most perfect ever written; and he said that the proper interpretation of them was the noblest task of contemporary musicians. The only dissenting voice in this chorus of praise was that of Berlioz; but, as Saint-Saëns (one of the principal worshipers) has pointed out, this was due solely to the fact that Berlioz was not familiar with the works of Bach. His preeminence is the more remarkable when we remember that he was born as early as 1685; but it seems perhaps a trifling less astonishing when we bear in mind that Johann Sebastian inherited the accumulated musical gifts of a long line of ancestors. "Throughout six generations," says Forkel, "there were hardly two or three members of this family who did not inherit a natural talent for music, and make the cultivation of this art the principal occupation of their life." For more than a century there were so many representatives of this widely-scattered family that in one place, at any rate (Erfurt), town musicians came to be called "Bachs," even when that family did not happen to be represented among them. After the culmination had been reached, however, in Johann Sebastian, the family-tree soon withered, although some of his sons play a quite considerable rôle in musical history.

At the age of 10, Johann Sebastian was left an orphan, in care of his older brother, John Christoph, who appears to have been jealous of the boy's musical gifts. Christoph had got together a collection of the best German organ music of the time, which Sebastian was very eager to get at and study. Denied access to it, he managed to smuggle it into the garret, where, for six months, he busied himself making a copy of it on moonlit nights. But the brother at last discovered his secret and took away from him both the copy and the original. This is only one instance of many showing how Sebastian was determined to educate himself in face of all obstacles. Several times he went on foot to Hamburg — a distance of 25 miles — to hear the famous organist Reinken; subsequently he made a similar trip to hear the illustrious organist Buxtehude at Lübeck. This happened when he himself was already busy as organist and choirmaster at Arnstadt. Previously to that he had, as a boy, helped to support himself by joining a choir of boys who sang at funerals and weddings, as well as in church and in the street. He missed no chance to practise on the violin, the organ and the piano — or, rather, the harpsichord and clavichord, which were the predecessors of the pianoforte. To these tasks and in his efforts at composition, he often devoted whole nights. He got his first salaried position (as violinist) in 1703 at Weimar, but left this post after a few months for that of organist at Arnstadt. It was thence that he made the trip (a foot tour of over 200 miles) to Lübeck, already referred to, to hear Buxtehude. He had obtained a four weeks' leave of absence, but was so delighted with his opportunities for improvement at Lübeck that he remained four months, until peremptorily called back. The church consistory of Arnstadt took this occasion to reprimand him, not only for prolonging his leave of absence, but for neglecting rehearsals, going to a wine cellar during the sermon, allowing a strange maiden to make music in the choir, and for "having made extraordinary variations in the chorals, and intermixing many strange sounds, so that thereby the congregation were confounded." Yet, with all his faults, they loved him still and allowed him to remain at his post, till he left of his own accord, having secured a position as organist at Mühlhausen. Here, too, however, he did not remain long, as still better opportunities presented themselves to him at Weimar, where the Duke Wilhelm Ernst had his court. This duke was deeply interested in the religion of the German Protestant Church and was glad to avail himself of the services of Bach, who was destined to become the chief representative of the music of that church, as Palestrina was of the Catholic Church. Here Bach remained nine years, during which time he wrote many of his master works for organ and church choir. In 1717 he accepted a position in Köthen which involved a complete

change in his activity. Instead of having an organ and choir to occupy his time he had the duty, as Kapellmeister, of writing and rehearsing works for the orchestra as a whole or for groups of orchestral instruments (chamber music). In 1720 he was a candidate for the post of organist at the Jacobi Kirche in Hamburg; but, although he was at this time already famous as an organist, he failed to get the place, an obscure young man having secured it after paying $1,000 for the office. Three years later Bach became the cantor of the Thomasschule at Leipzig and director of the music in the two principal churches; this position he held 27 years, till his death, 28 July 1750, at the age of 65.

Bach was twice married and became the father of 20 children; five sons and five daughters died before him, while six sons and four daughters survived him. His first wife was also a Bach — a cousin; she died in 1720, while he was on a concert tour. Eighteen months after her death he married a girl of 21 who was also musical; yet none of the 13 children by this second marriage attained as high a rank as some of the seven by the first wife. The second wife helped him copy his MSS. (which he was constantly revising) and in course of time her handwriting came to resemble his so closely that the two were hard to distinguish. In no way did Bach differ more widely from his great contemporary, Handel, than in his family life; Handel died a bachelor. There were times when Bach found it difficult to bear the material burden of his large family, but he was not so poor in his lifetime as is usually supposed. His income from various sources was, it is true, only about $500 at the best; but the purchasing power of that sum was equal to $3,000 in our day. It was after his death that the pinch of poverty was felt; his widow died in an almshouse; he himself was buried in a pauper's grave. For more than a century no one knew the exact place of this grave; the circumstances of its discovery read like a detective story. Some years ago it became necessary to rebuild the old Johannis Church in Leipzig, and, in connection with this, to remove the bones from that part of the adjoining cemetery in which Bach was believed to have been buried. The director of the archives, Wustmann, took this opportunity to search for Bach's grave. He had found in the books of the Johannis Hospital an item stating that $4 had been paid for Johann Sebastian Bach's oak coffin, which gave him his principal clue, for oak coffins were seldom used in those days. Near the place where Bach was believed to have been buried he found two oak coffins, one containing the remains of a young woman, the other the bones of a man, whose skull was so unique as to arouse the suspicion at once that it was Bach's. It was placed in the hands of the famous anatomist, Professor His, who, after a long series of comparative investigations, came to the conclusion that there could be no doubt whatever that the skull was Bach's. He embodied his argument in a brochure, «Forschungen über Bach's Grabstätte und Gebeine.», The fact that Bach's contemporaries thus took no note of his burial place is convincing evidence that they never dreamed that he was destined to rank as the greatest of all musical geniuses. Further evidence of this lies in the circumstance that he really brought about his death by his efforts to save some of his unappreciated MSS. from destruction by engraving them on copper plates. This led to serious trouble with his eyes; two operations by an English surgeon were followed by total blindness, which made it impossible for him to complete his great work, «The Art of Fugue.» He dictated for its final number a choral, «When we were overwhelmed by Woe,» and died not long afterward.

The thematic catalogue of his works contains 1,110 instrumental and 1,936 vocal numbers. All of them combined probably never brought him in as much as the $1,175 paid at a Berlin auction sale a few years ago for three of his MSS. Until 1829, when Mendelssohn, after overcoming a good deal of opposition, succeeded in producing the wonderful 'Saint Matthew's Passion' in Berlin, for the first time since its composer's death, the great Leipzig Cantor was looked on, in Mendelssohn's words, as «a mere old-fashioned big-wig stuffed with learning.» That work opened the eyes of the musicians to their colossal stupidity, and from that year to the present time Bach's fame has been growing in a steady crescendo. In 1851 a Bach Society was formed at Leipzig for the printing of a monumental edition of Bach's works by Breitkopf and Härtel. For nearly half a century (up to 1896) a huge folio volume was issued every year, and after its completion the Bach Society began to make efforts for multiplying performances of these works, the majority of which constitute even now an unsurveyed Klondike. Bach himself does not appear to have been chagrined by the neglect of his works during his lifetime. «We find in him,» writes Abdy Williams, «little of that desire for applause, for recognition, which is usually one of the strongest motives in an artist. He was content to labor as few men have labored, in a remote corner of Germany, simply for art and art alone.» To cite Bach's own words: «The sole object of all music should be the glory of God and pleasant recreation.» At the same time, it is obvious that he would have been gratified if he had won, as composer, some of the honors which fell to him abundantly as player. Of the esteem in which he was held as organist and clavichordist, two anecdotes give the best illustration. In 1717, while on one of his concert tours, he happened to be in Dresden at the same time as the famous French organist and harpsichord player Marchand. The Dresdeners thought this was a good chance for an international contest, and Bach was induced to offer the Frenchman a challenge. It was accepted and all the details had been arranged; but when the hour arrived there was no Marchand. He had taken «French leave» that morning on the fast coach! Many years later, in 1747, Bach accepted a repeatedly given invitation to visit Frederick the Great at Potsdam. The King was delighted to see him. Without allowing him to take off his traveling clothes, he made him improvise on all the pianos and organs in his palace, and again and again he exclaimed: «There is only one Bach!»

It has been said of Bach that music owes almost as much to him as a religion does to its founder. This is true especially of two branches — the organ and choral music. Both as a writer for the organ and a player he has had no equal.

The best account of this phase of his art is contained in Pirro's 'Bach, the Organist, and his Works for the Organ'; the author's aim being to make it easier to play Bach "in the Bach spirit." He refers to the great composer as "the man who suddenly surpassed all that had been done before him while at the same time anticipating all that was to be written in the future." The organ works are contained in Vols. XV. XVII, XXXVIII and XL of the Breitkopf and Härtel edition. Some of them are best known to music lovers through their superb arrangements for pianoforte by Liszt, Busoni and others. Quite as striking is Bach's pre-eminence in choral music. The vocal works make up more than 30 volumes; among them there are four of chamber music with voice, nine of passions, oratorios and masses; and no fewer than 17 of church cantatas. It is known that he wrote five complete sets of these cantatas for all the Sundays and holidays in the year; probably there were about 350 in all, but of those only about 200 have been preserved. The greatest choral works in existence are Bach's 'Saint Matthew Passion' and his Mass in B minor. Schumann preferred the 'Saint John Passion' even to the Saint Matthew. Three other passions written by Bach are lost. Concerning this class of works Wagner exclaimed: "What opulence, what fullness of art, what power, clearness, and withal simple purity, speak to us from these unrivalled masterworks!" They are made up of arias, recitatives, chorals and other choruses, beside the instrumental accompaniment. The arias are sometimes embroidered after the fashion of the time, but usually they are simple, chaste and delightfully melodious. Indeed, Bach was so full of melody that it overflows into his recitatives, which are, at the same time, often highly dramatic and emotional, foreshadowing Wagner's. If Bach had written operas they would have been more dramatic than Handel's; but the opera was (apart from the *Lied,* or lyric art song, which had not yet been created), the one form of music which Bach avoided. As for the choruses in his works, they are of incomparable grandeur, and at the same time of great difficulty. All the parts are melodious; indeed there is in these works little practical difference between the chorus singers and the soloists. Many of the choruses are stately chorals — the hymns introduced into the Church by Luther and perfected by Bach. These were sung by the trained choir, the harmonies being too elaborate for the congregation. In his own churches Bach found the means of execution lamentably inadequate. The singers and students could barely master the technique; of the inner spirit they had no conception.

Of Bach's orchestral scores, also, it may be said that all the players are, in turn, soloists. His harmony is "a manifold melody"; it forms the bridge between the mediæval polyphonic and the modern harmonic styles. In his orchestral accompaniments, a favorite device is an *obligato* part for some string or wind instrument playing a duet with the solo voice. His works for orchestral instruments alone comprise three overtures and six concertos. Among his compositions for violin there are three suites and three sonatas that are unique, inasmuch as they have no pianoforte accompaniment but are complete in themselves, the polyphonic or harmonic accompaniment being played together with the melody by the violinist; for the violoncello, also, there are six sonatas and suites of this kind. While it is true that in all of his works the organ style prevails more or less, there is nevertheless a keen instinct (far ahead of the time in which he lived) for what is idiomatic, or peculiar to each instrument. This is particularly true in regard to the pianoforte compositions. In these, Bach is more modern than Haydn, Mozart or even Beethoven. While writing for the imperfect clavichords and harpsichords of his time he had in his mind a prophetic vision of the modern grand piano; on that alone can justice be done to his superb compositions of this class. His preludes and fugues, his inventions, suites, toccatas, fantasias, etc., are the fountain head of modern music. Of special importance is the 'Well-tempered Clavichord,' a collection of 48 preludes and fugues, two in each key, arranged in the order of chromatic ascent. Hans von Bülow called this "the Old Testament in music." It is indispensable to every student; but it is infinitely more than a group of studies. "We find these fugues," wrote Rubinstein, "of a religious, heroic, melancholy, grand, serious character; in one respect only are they alike — in their beauty! And then the preludes, whose charm, variety, perfection and splendor are simply incomparable! That the same composer who wrote those organ compositions of overwhelming grandeur could also write such delightfully humorous gavottes, bourrées, gigues, such melancholy sarabandes, short piano pieces of such charming simplicity, transcends belief. These remarks refer to his instrumental works alone, but if we do add to them his gigantic vocal compositions, we are led to the conclusion that the time will come when it will be said of Bach as of Homer: 'This was not written by one man but by several.'" Rubinstein's reference to the gavottes, etc., calls attention to the fact that Bach was not above writing dance music; a great deal of it, in fact. He also did much to improve the technique of pianoforte playing, especially in the matter of fingering (use of thumbs). He would have been the first to adopt all modern improvements, and in playing him, therefore, the pedal, for instance, should be used as freely as in playing Chopin. And while it was not customary in Bach's day to write expression marks, it is idiotic to suppose that he played his pieces without changes in loudness and pace. Here students should follow the guidance of Liszt and Bülow. The more Bach's works are studied from this point of view, the more does he seem a modern romanticist, and his works music of the future, even more than music of the past. Mendelssohn all his life furthered the cause of Bach and his efforts resulted in the erection of the first statue of the *Altmeister,* as Bach has been affectionately called, at Leipzig in 1842. In 1884 a fine bronze statue was erected at Eisenach, and in 1900 a full-sized bronze statue was unveiled with imposing ceremonies in Leipzig. In addition to the 60 volumes of Bach published by Härtel and Hauptmann, new volumes have been published annually since 1904 by the Neue Bach Gesellschaft, appearing as the 'Bach Jahrbuch.' In 1907 the Bach birthplace at Eisenach was

opened as a Bach Museum. There are now Bach societies in several countries.

**Bibliography.**— Spitta's 'Bach,' in 2 vols. (English by Bell & Maitland, London 1899) is the most elaborate and authoritative work. Of the shorter books the most serviceable is that by Abdy Williams, which also contains a classified list of Bach's works and a bibliography. Consult also Parry, 'The Evolution of the Art of Music' and 'Johann Sebastian Bach' (New York 1909); Apthorp, 'Musicians and Music Lovers'; Franz, R., 'Gesammelte Schriften über die Wiederbelebung Bach'scher und Händel'scher Werke' (Leipsig 1910); Wolfrum, Ph., 'Johann Sebastian Bach' (2 vols., Leipsig 1910); Schweitzer, A., 'J. S. Bach, le musicien-poète' (ib. 1905), and Vol. IV of the 'Oxford History of Music'; 'The Age of Bach and Handel' by Fuller Maitland.

HENRY T. FINCK,
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**BACH, Karl Philipp Emanuel,** German musician: b. Weimar, 14 March 1714; d. 14 Dec. 1788. He was the son of Johann Sebastian Bach and was court musician in the service of Frederick the Great in 1746–68, afterward holding an appointment at Hamburg. He wrote on the theory of piano playing and was a voluminous composer of Passion music, pianoforte compositions and of two oratorios, one 'Israel in the Wilderness.'

**BACH, Wilhelm Friedemann,** known as the "Halle" Bach, German composer and musician: b. Weimar, 22 Nov. 1710; d. Berlin, 1 July 1784. He was the oldest of the sons of Johann Sebastian Bach, from whom he received his training, and who regarded him as the most brilliant of all his children. He was organist of Saint Sophia, Dresden, from 1733 to 1747, and of Saint Mary's, Halle, from 1747 to 1764. His irregular habits and addiction to drink led to his dismissal, and he never afterward obtained a position, but wandered from city to city and died in squalor in Berlin. He wrote several works for piano, containing concertos, sonatas, a suite of fantasias; these were edited by Riemann. An organ concerto and fugue were edited by Stradal. All his works show an extraordinary talent.

**BACH FESTIVAL,** the annual musical festivals held at Bethlehem, Pa., and resembling in a degree the performances at Bayreuth and Oberammergau. The festival arose in connection with the Moravian church of Bethlehem, the liturgy of which has a strong musical tendency. Early in its history Bethlehem had an orchestra, probably the first in America, and in its churches were employed flutes, horns, violas and trombones, which undoubtedly originated and led up to the gala performances of the present day. Its resemblance to Oberammergau is in its religious character, the Protestant sentiment of which finds its best expression in the music of Bach. In 1901 Bach's 'Christmas Oratorio' was performed for the first time in America in its entirety. Under the direction of J. Frederick Wolle others of Bach's greatest works have been presented. The choir consists of 110 members, with a separate chorus of 100 boys, and an orchestra of 60 instrumentalists. From 1906 to 1912 annual Bach festivals were given at Berkeley, Cal., by Mr. Wolle, but on his return to Bethlehem in the latter year the festivals were resumed at Bethlehem, Pa.

**BACHARACH,** bäH'a-raH, Germany, a town on the Rhine, 12 miles south of Coblenz. The vicinity produces excellent wine, which was once highly esteemed as annual tribute by Emperor Wenzel and the Pope. The view from the ruins of the castle is one of the finest on the Rhine. Pop. about 1,900.

**BACHE,** bāch, **Alexander Dallas,** American scientist: b. Philadelphia, Pa., 19 July 1806; d. 17 Feb. 1867. He was a grandson of Benjamin Franklin, and was graduated at the United States Military Academy, at the head of his class, in 1825; became professor of natural philosophy and chemistry at the University of Pennsylvania 1828–37; was the organizer and first president of the trustees of Girard College, 1836, where he established a magnetical and meteorological observatory; he bore a prominent part in developing the system of free education in Philadelphia, and was appointed superintendent of the United States Coast Survey in 1843. In the last office he performed services of lasting and invaluable character. He was regent of the Smithsonian Institution in 1846–67; an active member of the United States Sanitary Commission during the Civil War, and president of the National Academy of Sciences in 1863, to which he bequeathed $42,000 for scientific research. Besides a long series of notable annual reports of the United States Coast Survey, he published a report on 'Education in Europe' (1839), and 'Observations at the Magnetic and Meteorological Observatory at the Girard College' (3 vols., 1840–47).

**BACHE, George M.,** American naval officer: b. in the District of Columbia, 12 Nov. 1840; d. 11 Feb. 1896. He was graduated at the United States Naval Academy, in 1861, and commanded the ironclad *Cincinnati* in the various engagements on the Mississippi River, until she was sunk by the Vicksburg batteries, 22 May 1863. He was highly commended by Admiral Porter, General Sherman and Secretary Welles for his conduct in the last engagement. Subsequently, he took part in both attacks on Fort Fisher, and, in the second one, 15 Jan. 1865, led the naval assault on the fort. He retired with the rank of commander, 5 April 1875.

**BACHE, Hartman,** American military engineer: b. Philadelphia, Pa., 3 Sept. 1798; d. 8 Oct. 1872. He entered the United States Topographical Corps; and for 47 years was constantly employed on surveys and on works of hydrography and civil engineering. On 13 March 1865 he was appointed brigadier-general, and 7 March 1867 was retired. His most notable achievements were the building of the Delaware breakwater and the application of iron-screw piles for the foundation of lighthouses upon sandy shoals and coral reefs.

**BACHE, Sarah,** American philanthropist: b. Philadelphia, Pa., 11 Sept. 1744; d. 5 Oct. 1808. She was the only daughter of Benjamin Franklin, and the wife of Richard Bache. During the Revolutionary War she organized and became chief of a band of patriotic ladies who made clothing for the soldiers, and in other ways relieved their sufferings, especially during the severe winter of 1780.

**BACHE, Walter,** English pianist: b. Birmingham, 19 June 1842; d. London, 26 March 1888. In 1858 he studied music in the Leipzig Conservatorium under Hauptmann, Richter, Plaidy and Moscheles. In 1862 he went to Rome, and from that time till 1865, when he returned to London, studied with Liszt, of whose style and compositions he became an ardent admirer and advocate. In London he instituted annual concerts, at which he put forward Liszt's music, and lived long enough to see the indifference of the public toward his master change to open admiration. For several years Bache was professor of the pianoforte at the Royal Academy of Music, and it was mainly due to his efforts that the Liszt scholarship was established in that institution.

**BACHELDER, Nahum Josiah,** American politician: b. Andover, N. H., 3 Sept. 1854. Educated at Franklin Academy, Taunton Hill School, Andover, he became a prominent farmer; was nominated by the Republicans and elected governor of New Hampshire in 1902. He was master National Grange, 1905–11, and received degrees from Dartmouth and New Hampshire Colleges.

**BACHELET,** bąsh'lā, **Jean Louis Théodore,** French historian: b. Pissy-Pôville, Seine-Inférieure, 1820; d. 1879. He was educated at the Ecole Normale, and after serving as professor of history in various institutions, including the Rouen Lyceum, he became librarian of Rouen. His publications include 'La guerre de cent ans' (1852); 'Cours d'historie' (3 vols., 1868–75); 'Dictionnaire générale de biographie et d'historie,' with C. Dezobry (12th ed:, 1902); 'Dictionnaire générale des lettres, des beaux-arts, des sciences morales et politiques' (7th ed., 1902).

**BACHELLER, Addison Irving,** American novelist: b. Pierpont, N. Y., 26 Sept. 1859. He was graduated at the Saint Lawrence University in 1882; 1882–83 was a member of the staff of the *Daily Hotel Reporter* of New York city and in 1884 became a reporter for the Brooklyn *Times*. In the latter year he established the Bacheller Syndicate for the purpose of supplying literary matter to periodicals and for 14 years was a director of that syndicate. He was for a short time editor of *The Pocket Magazine*, and subsequently joined the editorial staff of the New York *World*, but remained in that capacity for a short time only. His novels, the scenes of which are laid in northern New York, include 'The Master of Silence' (1890); 'Eben Holden' (1900); 'D'ri and I' (1901); 'Darrel of the Blessed Isles' (1903); 'Virgilius' (1904); 'Silas Strong' (1906); 'Eben Holden's Last Day a-Fishing' (1906); 'The Hand-Made Gentleman' (1907); 'The Master' (1908); 'In Various Moods' (1908); 'Keeping Up With Lizzie' (1910); 'Charge It' (1911); 'The Turning of Griggsby' (1912); 'The Marryers' (1914); 'The Light in the Clearing' (1916).

**BACHELOR,** a term anciently applied to a person in the first or probationary stage of knighthood who had not yet raised his standard in the field. A knight bachelor is one who has been raised to the dignity of a knight without being made a member of any of the orders of chivalry such as the Garter or the Thistle. The title "Sir" of a knight bachelor is not hereditary. It also denotes a person who has taken the first degree in the liberal arts and sciences, or in divinity, law or medicine, at a college or university; or a man of any age who has not been married, the most usual meaning of the term. Taken as a class in a community, bachelors have, from the earliest times, been the subjects of much and varied legislation. In nearly every country, at some period in its history, penalties have been imposed upon male celibates through the legislative branch of the government, the general basis for such legislation being the principle that the citizen was under moral obligation to the state to rear up a family of legitimate children, at least should he be capable, morally, physically and financially. The old Jewish command to "be fruitful and multiply" was faithfully carried out by the Hebrews who regarded marriage as a duty.

In such nations as Sparta, where individual interests were always subservient to those of the state, the laws were more severe, and criminal proceedings were instituted, under the laws of Lycurgus, both against those who for any unreasonable excuse failed to marry, and against those who through marriage in late life made probable children of unhealthy constitution. At Athens, though formerly regarded as a crime by the laws of Solon, celibacy was not severely punished, and later, though the practice was discouraged, interference with the inclinations of individuals in this respect gradually became of little practical value, and the laws finally fell into disuse.

In Rome, the imposition of heavy penalties upon male celibates was instituted at a very early period, and later even women were subjected to the same rigid laws. According to the *Lex Julia et Papia Poppæa*, penalties were imposed on those who failed to marry after a certain age, and an unmarried person could not come into possession of a legacy unless he be married within a hundred days after the testator's death. The provisions of the law allowed widows a year in which to comply, and divorced women six months from the date of divorce, but these periods were later changed and extended to two years, a year and six months, respectively. This law did not apply, however, to men above 60 years of age, and women above 50 years. In cases of childless persons (males from 25 to 60 years of age, and females from 20 to 50 years) who should become beneficiaries under a legacy, one-half of the value of such legacy was forfeited. In later years, especially in England, France and the United States, taxes upon bachelors have been proposed more for purposes of state revenue than to compel marriage, but though such legislation has been pushed in some instances with great vigor, the success of the movement has not been marked.

**BACHELOR,** a local name in the Mississippi Valley for the small bass, more usually called crappie (q.v.).

**BACHELOR'S BUTTON,** the double yellow buttercup (*Ranunculus acris*). Similar forms, as *R. aconitifolius*, are often called white bachelor's buttons. The name is also given to *Centaurea cyanus* (see CORNFLOWER) and to *Gomphrena globosa*.

**BACHER,** bäH'ĕr, **Wilhelm,** Jewish theologian and Orientalist: b. Lipto-Szent-Miklos, Hungary, 1850; d. 1913. He was educated in the universities of Budapest and Breslau and at the Jewish Theological Seminary of Breslau. He was appointed professor in 1877 and in 1912 director of the rabbinical public schools of Budapest. He published 'Nizamis Leben und Werke' (1872); 'Die Agada der Babylonischen Amoräer' (1878); 'Die Agada der Sannaiten' (2 vols., 1889–90); 'Die Agada der Palästinensischen Amoräer' (3 vols., 1892–99); 'Die Anfänge der Hebräischen Grammatik' (1895); Ein Herbäisches Wörterbuch aus dem Vierzehnten Jahrbundert' (1900); 'Die Agada der Tannaiten und Amoräer; Bibektellenregister' (1902); 'Aus dem Wörterbuche Tanchum Jeruschalemis' (1903).

**BACHIAN, or BATJAN,** bäch-yän', one of the Molucca Islands, immediately south of the equator, and southwest of Gilolo; area, 914 square miles. It is ruled by a committee of native chiefs under the Dutch, and has a population of about 13,000.

**BACHMAN,** bă'mạn, **John,** American clergyman and naturalist: b. Dutchess County, N. Y., 4 Feb. 1790; d. 25 Feb. 1874. He became pastor of a Lutheran church in Charleston, S. C., and published, among other works, 'Characteristics of Genera and Species as Applicable to the Doctrine of the Unity of the Human Race' (1854). He is best known by reason of his association with Audubon in the making of the 'Quadrupeds of North America,' he writing the principal part of the text, which Audubon and his sons illustrated.

**BACHMUT, or BAKHMUT,** bạch-moot', Russia, a town of the government of Ekaterinoslav, with a trade in cattle and tallow. It has coal mines and salt wells, and soda is extensively manufactured. Pop. 19,500.

**BACHTOLD, Jakob,** German literary historian: b. Schleitheim, Switzerland, 1848; d. Zürich 1897. He was educated at Heidelberg and later studied at Munich, Tübingen, Paris and London, and in 1872 became an instructor in the Solothurn Gymnasium. He was appointed professor of the German language and literature at Zürich in 1888. His most important works are 'Geschichte der deutschen Litteratur in der Schweiz' (1887–92); 'Deutsche Handschriften aus dem Britischen Museum' (1873); 'Gottfried Kellers Leben' (3 vols., 1894–97). He also edited Goethe's 'Götz von Berlichingen' (1882) 'Iphigenia' (1883); 'Dichtung und Wahrheit' (1890–91). With Vetter he edited the 'Bibliothek älterer Schriftwerke der deutschen Schweiz und ihres Grenzgebietes.' Vetter published 'Kleine Schriften von Jakob Bächtold' (1899).

**BACILLUS.** See BACTERIA.

**BACK, Sir George,** English explorer: b. Stockport, 6 Nov. 1796; d. London, 23 June 1878. He entered the British navy in 1808, and in 1817 was in the expedition to Spitzbergen. He accompanied Sir John Franklin to the Arctic regions in 1819 and again in 1825, and in 1833 led a party in search of Sir John Ross, then in the Arctic Ocean, and in 1836, in command of the *Terror,* made his last trip to the north. The Geographical Society awarded him a gold medal in 1837, and in 1839 he was knighted. He became admiral in 1867. Among his works are 'A Narrative of the Arctic Land Expedition' (1836); a 'Narrative of the Expedition in Her Majesty's Ship Terror' (1838).

**BACK BAY,** a fashionable residential district in Boston, made by filling in an enlargement of the Charles River, formerly called the Back Bay. See BOSTON.

**BACK LAND,** name applied to the region around the Arctic Circle, in British North America. It was explored by Captain Back in 1831.

**BACK-STAFF,** an instrument invented by Captain Davies, about A.D. 1590, for taking the altitude of the sun at sea. It consisted of two concentric arcs and three vanes. The arc of the longer radius was 30°, and that of the shorter one 60°; thus both together constituted 90°. It is now obsolete, being superseded by the sextant.

**BACKBITE, Sir Benjamin,** an evil-minded, sharp-tongued character in Sheridan's comedy, 'School for Scandal.'

**BACKER, Jakob,** Dutch painter: b. Haerlingen 1608; d. 1651. He was a pupil of Lambert Jakobsz at Leuwarden and later of Rembrandt at Amsterdam. His work shows the influence of the latter. His greatest masterpieces are 'Lady Regents of the Amsterdam Orphan Asylum,' still in place, and the 'Guild of Archers' in the Amsterdam Town Hall.

**BACKGAMMON** is a game in which two opposing players move symbolic men into or out of each other's territory on a board, according as they are respectively entitled to do so by the throw of dice. Without question a game of that nature was played among the Aztecs of Mexico centuries before the landing of Cortez, and it is probable that it was brought from Asia to the Pacific coast by the original immigrants. Francisco Lopez de Gomara described it in 1552, and Joan de Torquemada in 1616 gave additional details of the game, mentioning that the little stones of each contestant varied in color. The Iroquois Indians had a dice game of a somewhat similar sort. Modern backgammon is played by two players who have between them a board, each side of which has alternate black and white angular marks projecting like rays from the rim. Each player has 15 flat tablets (similar to those with which drafts is played) called men. One player's men are black, the others are white. Each player has a dice box for his own use but the two dice are used alternately by them both. Each die has a number on each face numbered from one spot to six. Each player throws the dice in turn on to the centre of the board: and moves two men, one man according to the distance indicated by one of the dice and the other according to the number on the second dice. So the game proceeds in the usual manner, the players throwing and moving their men alternately into and out of each other's territory, until one player has carried all the men from the opposite home (or inner table) into the outer table: and thence into his own outer table and finally into his own home or inner table. The simplest textbook on the subject is that of A. Howard Cady. Consult also Pardon and Anderson, 'Backgammon and Draughts' (New York 1889).

**BACKHAUS, Wilhelm,** famous German pianist: b. Leipzig, 26 March 1884. When seven years of age, he received regular piano instruction from A. Reckendorf. He also spent four years (1894–98) at the Leipzig Conservatory, during which period he continued his studies with Reckendorf. He also studied for a time at Frankfurt under Eugen d'Albert, and began his concert career in 1900, when his success was immediate and complete. He won immediate recognition in England and in 1905 was appointed professor of piano at the Royal College of Music, Manchester. He won the Rubinstein Prize in the same year and thereafter gave all his time to concert tours. He visited America in 1912 and received generous recognition. He is ranked among the most artistic of living pianists.

**BACKHUYSEN,** bäk'hoi-zen, or **BAKHUYSEN, Ludolf,** celebrated painter of the Dutch school, particularly in sea pieces: b. Emden, 18 Dec. 1631; d. 1709. His most famous picture is a sea piece which the burgomasters of Amsterdam commissioned him to paint as a present to Louis XVI, and which is still at Paris.

**BACKLOG STUDIES,** by Charles Dudley Warner, was first published in book form in 1872, though most of the papers had already appeared in *Scribner's Monthly*. The title «studies» may be misleading, since the pleasant, informal personal essays touch but lightly on any question of literature, art or politics, and do not go deeply into the philosophy of life. They celebrate, as a sort of central theme the joys of the open fire, and they call up for brief comment many of the things that might be discussed by an intelligent family group about the hearth — contemporary fashions in church and in domestic architecture, the ways and the whims of reformers, the influence of costume on acting, etc. Some, though not usually the best, parts are in the form of conversations in which The Mistress, The Fire-Tender, Our Next Door Neighbor, The Young Lady who is Staying with Us, and others take part; but usually the author speaks in his character as an alert and slightly whimsical New Englander. To readers of American essays the book naturally calls to mind the 'Breakfast-Table' series by Dr. Holmes, and less forcibly the lighter writings of Donald G. Mitchell. Notwithstanding a strong protest in one of the studies against the comparative method in criticism, it may be said that these papers, though sometimes almost over-clever, are less brilliant and less urbane than the «Autocrat of the Breakfast-Table,' and are freer from excess of sentiment than the 'Reveries of a Bachelor.'

WILLIAM B. CAIRNS.

**BACKLUND, Johan Oskar,** Swedish astronomer: b. Lenghem 1846. In 1875 he was appointed lecturer at the University of Upsala, and became assistant at the Stockholm Observatory 1876, and in the same year observator at the Dorpat Observatory. Later he became adjunct-astronomer at the Pulkowa Observatory, Russia, and in 1895 was appointed director there. His investigations have been chiefly concerned with the progressive decrease in the period of Encke's comet, and in this connection he has formulated his well-known «theory of disturbances.» He has published 'Observations de Pulkowa' (1888); and 'The Development of Celestial Mechanics during the Nineteenth Century' (1906).

**BACKUS, Azil,** first president of Hamilton College, Clinton, N. Y.: b. Norwich, Conn., 13 Oct. 1765; d. 9 Dec. 1817. After graduating at Yale in 1787, he served the church at Bethlehem, Conn., until he became president of Hamilton College in 1812.

**BACKUS, Isaac,** Baptist clergyman and author: b. Norwich, Conn., 9 Jan. 1724; d. 20 Nov. 1806. He was ordained in 1748 and became pastor of a Congregational church in Middleborough, Mass. Some of his congregation sympathizing with the Baptists he united with them and formed a Baptist church in 1756. Throughout his life he was a persistent advocate of the widest religious freedom, holding open communion for many years. For 34 years he was a trustee of the present Brown University, then Rhode Island College. As a delegate to the convention that adopted the Federal Constitution, he voted in its favor. Of his numerous writings the most important is 'A History of New England with Special Reference to the Baptists' (3 vols., 1777–96; new ed. by D. Weston, 2 vols., 1871), a partisan but valuable work. His 'History of Middleborough' is in Massachusetts Historical Society Collections (Vol. III, 1st Series, 1794; repr. 1810).

**BACKUS, Truman Jay,** American educator: b. Milan, N. Y., 11 Feb. 1842; was graduated at the University of Rochester in 1864; was professor of English literature at Vassar College, 1867–83; then became president of the Packer Collegiate Institute in Brooklyn, N. Y. After going to Brooklyn, he served on several State commissions. His publications include 'Great English Writers,' 'Outlines of English Literature,' and a revised edition of Shaw's 'History of English Literature.'

**BACLER D'ALBE,** bą'klăr', dälb', **Louis Albert Ghislain,** BARON, French artist, soldier and military cartographer: b. 1762; d. 1824. He served in all of Napoleon's campaigns and attained the rank of brigadier-general. Two celebrated paintings by him, 'The Battle of Arcola,' and 'The Battle of Rivoli,' are in the gallery of Versailles. He published 'Carte du théâtre de la guerre en Italie' (54 parts, 1802); and 'Souvenirs pittoresques contenant la campagne d'Espagne' (1824), and among other works a series of fine lithographic views.

**BACON, Albion Fellows,** American social reformer: b. Evansville, Ind., 1865; sister of Annie Fellows Johnston (q.v.). She married Hilary E. Bacon, of Evansville, in 1888. She early became noted as an organizer and leader of men's circles of «Friendly Visitors»; was leader of the Flower Mission for five years, and organizer of the Anti-Tuberculosis League, Monday Night Club, Working Girls' Association; director of the National Housing Association; and closely connected with the District Nurse Circle, Civic Improvement Society, State Federation of Women's Clubs and other similar organizations. She became noted as the author and leading advocate of the State tenement law of 1909, and is known as a lecturer and writer on tenement reforms. Author of 'Songs Ysame' (with her sister, Annie Fellows Johns-

ton, 1897); 'What Bad Housing Means to the Community'; 'The Awakening of the State' (1911).

**BACON, Alice Mabel,** American educator: b. New Haven, Conn., 26 Feb. 1858; was educated privately and took the Harvard examinations in 1881; taught at the Hampton Normal and Agricultural Institute in 1883–88, and in Tokio, Japan, in 1888–89; returned to the Hampton Institute in 1889, and founded the Dixie Hospital for training colored nurses in 1890. She published 'Japanese Girls and Women,' 'Japanese Interior,' 'In the Land of the Gods' (1905), etc.

**BACON, Augustus Octavius,** American legislator: b. Bryan County, Ga., 20 Oct. 1839; d. Washington, D. C., 14 Feb. 1914. He was graduated from the University of Georgia in 1859, from the law department of the University in 1860; entered the army of the Confederate States at the beginning of the Civil War, and was adjutant of the 9th Georgia regiment in the Army of Northern Virginia, and later promoted captain and assigned to general staff duty; and in 1866 began the practice of law at Macon, Ga. In 1880 he was president of the State Democratic convention, and in 1884 a delegate from the State at large to the national Democratic convention. He was a member of the Georgia house of representatives in 1871–82, 1892 and 1893, and for the greater part of the time its speaker. Elected to the United States Senate in November 1894, he was re-elected in 1900, 1907 and 1913 — the last time by direct popular vote. Upon the death of Vice-President Sherman he was, alternately with Senator Gallinger, president pro tempore of the Senate, in which capacity he presided at the impeachment proceedings against Judge Archbold in 1912. In 1913 he was chairman of the Senate committee on foreign relations, where his conservative attitude toward Mexico was effective in delaying radical action by Congress. He was a trustee of the University of Georgia and a regent of the Smithsonian Institution.

**BACON, Benjamin Wisner,** American theologian: b. Litchfield, Conn., 15 Jan. 1860; studied in Germany and Switzerland; and was graduated at Yale College in 1881; held several important Congregational pastorates; and in 1896 became professor of New Testament criticism and exegesis in Yale University. Author of 'Genesis of Genesis' (1891); 'Triple Tradition of the Exodus' (1894); 'Introduction to the New Testament' (1900); 'The Sermon on the Mount' (1902); 'The Story of Saint Paul' (1904); 'Beginning of Gospel Story' (1909); 'Founding of the Church' (1909); 'Commentary on Galatians' (1909); 'The Fourth Gospel in Research and Debate' (1909); 'Jesus the Son of God' (1911); 'Making of the New Testament' (1912); 'Theodore T. Munger, New England Minister' (1913); 'Christianity Old and New' (1913).

**BACON, Delia Salter,** American author: b. Tallmadge, Ohio, 2 Feb. 1811; d. 2 Sept. 1859. She was prominent in her day as a teacher, and wrote several stories, but is now remembered as an insistent advocate of the theory that the plays of Shakespeare were written by her namesake, Lord Bacon. She did not originate the idea, but was the first to give it any currency, in her 'Philosophy of the Plays of Shakespeare Unfolded' (1857). The book had the honor of a preface from the pen of Nathaniel Hawthorne, and the theory was accepted by a few persons in both England and the United States. I. Donnelly (q.v.) and others wasted not a little ingenious reasoning in its advocacy.

**BACON, Edwin Munroe,** American author: b. Providence, R. I., 20 Oct. 1844. He received an academical education; was on the staff of several Boston papers; and wrote 'King's Handbook of Boston'; 'Boston Illustrated'; 'Historic Pilgrimages in New England'; 'Literary Pilgrimages in New England'; 'Boston of To-day'; 'Bacon's Dictionary of Boston'; 'Walks and Rides in the Country Round About Boston'; 'Walks on the North Shore'; 'Massachusetts Bay' (1903); 'Yesterdays in Journalism'; 'Direct Election and Law Making by Popular Vote,' etc.

**BACON, Francis,** English statesman, philosopher and essayist: b. London, 22 Jan. 1561; d. Highgate, London, 9 April 1626. Bacon was commonly called Lord Bacon in accordance with long literary tradition, though his exact titles in the peerage were Baron Verulam and Viscount Saint Alban. He was the youngest of eight children of Sir Nicholas Bacon, the Lord Keeper, six of whom were by a former marriage. His mother was Ann, daughter of Sir Anthony Cooke, and her sister married Sir William Cecil (Lord Burghley). The family thus stood in a position of exceptional influence at the court of Elizabeth, but Bacon profited little by the fact in his official career. He entered Trinity College, Cambridge, in 1573 and was admitted to Gray's Inn in 1575. In 1576 he went to France as a member of the embassy of Sir Amias Paulet, and remained there until the death of his father in 1579. It then became necessary for him to return to England and take up his legal studies with a view to professional practice. In 1582 he was admitted to the bar. Already before this time he had entertained hopes of a political career and had made unsuccessful appeals to Lord Burghley for support; and in 1584, being elected to Parliament from Melcombe Regis, he began a long and conspicuous service in the House of Commons. He produced at once a political document, entitled 'A Letter of Advice to Queen Elizabeth,' in which the religious situation, and particularly the Catholic question, was discussed with wisdom and moderation. In 1589 he wrote a second paper, 'An Advertisement Concerning the Controversies of the Church of England,' reiterating his policy of moderation with more especial reference to Puritanism. Bacon's natural instinct, in both religious and political controversies, was conciliatory, and he exerted himself in favor of moderate measures throughout Elizabeth's reign and after the accession of James. He manifested also, at the beginning of his career, some power of acting with disinterested independence, — a capacity which was less evidently displayed in his later life. In 1593 he led the opposition of the Commons to the proposal of the Lords for a joint settlement of a question involving subsidies and thus falling within the prerogatives of the lower House. In his prolonged resistance to the subsidy legislation he earned the disfavor of both Burghley and the Crown. His opposition, which was ap-

parently conscientious, may have been the cause of his failure to obtain the vacant attorney-generalship in 1594 and the solicitor-generalship in 1595, though in the former instance his claim was urged by Essex and in the latter by both Essex and Burghley. The attorney-generalship was given to Sir Edward Coke, who was repeatedly a rival and enemy of Bacon's in later years.

Bacon's association with Essex, which constituted one of the most important of his personal relations, began in 1591. He attached himself to the rising young nobleman in the hope of obtaining political advancement. But it is not necessary to deny him all sentiment of personal attachment or all real belief in the availability of Essex for the public service. He received from Essex earnest patronage, as has been already shown, and when recommendations failed, Essex gave his follower a valuable estate by way of consolation. In 1597 Essex tried to arrange a marriage between Bacon and Lady Hatton, but Coke again proved a successful rival. Bacon, on his side, undertook to advise Essex and to manage his career at court. In 1598 he appears to have urged him (though he afterward denied it) to attempt the suppression of Tyrone's Irish rebellion,—an undertaking which led to the dismissal of Essex from office in disgrace. Bacon's conduct in the investigation is hard to trace, but he may perhaps be granted to have acted in the interests of Essex, though he was formally one of his prosecutors. Later, however, in 1601, when Essex rebelled openly against the throne, Bacon helped to secure his conviction, and after his execution prepared the official declaration of his treasons. For this active, and apparently unnecessary, participation in the prosecution of his friend Bacon has probably received more blame than for any other act of his life. It may be urged in extenuation that Essex was actually a dangerous person to the state, and that Bacon steadily warned him that he would not prefer the claims of friendship to the public good. It is true, too, that Bacon's position was difficult as between such a reckless friend and the jealous and imperious queen whose favor he desired both for his friend's interest and his own. Yet in the last analysis there is little defense to be made for Bacon's willingness to profit by the ruin of Essex.

After the accession of James I Bacon continued his active service in Parliament. He published papers on the religious situation and on the union of the English and Scottish crowns, and he served on a commission to arrange the terms of the union. In 1603 he was knighted, and in 1604 given a pension of £60. In 1605 he offered to King James the very important treatise on the 'Advancement of Learning,' which will be more particularly discussed below among Bacon's writings. In 1606 he married Alice Barnham, a London alderman's daughter, who brought him a substantial dowry. He had no children. Little is known of his domestic life except that it ended unpleasantly. In his last will he revoked "for just and grave causes" such provisions as he had made earlier for his wife's benefit. In June 1607, Bacon's long deferred advancement came and he was made Solicitor-General. At this period the unfortunate estrangement between the King and the Commons was steadily progressing, and Bacon, who clearly saw the danger that attended upon this breach of sympathy, took an earnest part in the struggle. Quite apart from his personal aims, he seems to have been genuinely distrustful of the governmental capacity of the Commons and consequently to have espoused the cause of the monarchy, becoming, as he described himself, a "peremptory royalist." His policy was doomed to failure; but it is only just to recognize that it had elements of moderation and statesmanship, contemplating to be sure the royal prerogative, yet aiming at religious toleration, the amelioration of the lot of the humbler classes, and a friendly relation with Parliament. After the death of Salisbury in 1612 he undertook to manage the King's interests, and in the Parliament of 1614 he continued his efforts to reconcile the Crown and the people by the policy to which in 'Commentary' he gives the name "e Gemino." But his attempt was unsuccessful; the Parliament was dissolved, and the King and the people took different courses. From this time forth Bacon seems on the whole to have relinquished his higher political aims and to have given himself over to the struggle for personal advancement. In politics, as in friendship, he was incapable of serious self-sacrifice; or at least he always persuaded himself that he could best serve the public good by having due regard to his own interests.

In 1613 he had been promoted to the attorney-generalship. In 1615 he prosecuted Baron St. John for denouncing benevolences, and in the same year he consented to the torture of Edmund Peacham, who was charged with having written a treasonable sermon. He came in the latter case into conflict with his old enemy, Coke, who denied Peacham's guilt, and who also objected to the separate consultation of the judges by the Attorney-General. In 1617 Bacon helped to secure Coke's removal from the King's Bench for insufficient subserviency to the Crown. Coke's personal independence throughout the controversy has been often praised, and stands in favorable contrast with Bacon's self-seeking policy. At the same time it should be remembered that there was involved a real issue between the legal and the political powers, and that Bacon, in resisting Coke's effort to make the court an arbiter of the Constitution, was fighting for the principle which actually prevailed, though under changed conditions, in English government.

Bacon took part in 1616 in the prosecution of the Earl of Somerset for the murder of Sir Thomas Overbury, and after Somerset's fall he attached himself with ardor to George Villiers, the King's new favorite, in whom he seemed, along with many others, to be for the time genuinely deceived. Through Villiers (afterward Earl and Duke of Buckingham) Bacon received a succession of royal favors. In 1616 he was made Privy Councillor, in 1617 Lord Keeper and in 1618 Lord Chancellor. In July 1618 he was elevated to the peerage as Baron Verulam, and in 1621 he was made Viscount St. Alban. But his adherence to Buckingham, who was growing steadily unpopular, led at last to disaster. In 1621 the Commons, led by Coke, would have called Bacon to account for defending Buckingham's increase of monopoly patents, if the King had not interfered. Thereupon they sent to the Lords a

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formal accusation that Bacon had taken bribes from suitors in his court. Bacon at first treated the charges with unconcern. Then, when he found that the Lords meant to investigate them seriously, he collapsed and offered no defense. He was fined £40,000, imprisoned and banished from Parliament and the court. In June 1621, he was released from the Tower, and retired to his family residence at Gorhambury; and in September of the same year the King pardoned him, though without restoring him to Parliament and the court. Bacon begged both James and Charles without avail for a further remission of his penalty. While admitting the justice of his condemnation, he protested that there had been no juster judge in England for 50 years; and there is of course an important difference between corruption and perversion of justice. Although he constantly accepted gifts from suitors while their cases were pending, it does not appear that he ever perverted justice for money, and some of the cases urged against him were those in which the suitors had lost after giving him gifts. But this record is not so clear in cases where Buckingham interposed to ask favor for his friends, and in at least one instance he allowed a decision of his court to be practically set aside at that favorite's request.

Forbidden to re-enter the field of politics, Bacon devoted the last years of his life to the literary and scientific labors which had always divided his time and which he had professed to regard as his real and proper work; and he met his death as a result of a scientific experiment. In March 1626, he caught cold while stuffing a fowl with snow in order to observe the effects of refrigeration on the preservation of meat. On 9 April he died of what is now known as bronchitis at the house of Lord Arundel, where he had been carried at the time of his attack. He was buried in Saint Michael's Church, Saint Albans.

**Bacon's Writings.**— From early youth, if tradition can be trusted, Bacon showed extraordinary mental powers and a keen interest in philosophical pursuits. Throughout his life his labors in authorship kept pace closely with his political work, and prone as he was to yield to the temptations of wealth and power, he seems really to have accorded the first place in life to what he called his "contemplative aims." His strictly philosophical writings may, therefore, properly claim first attention among his works. At the age of 23 he produced an essay which bore the ambitious title, 'The Greatest Birth of Time, or the Great Renewal of the Empire of Man Over the Universe.' The work is now lost, but the title shows that the young author had already conceived some notion of a "great instauration." The 'Partus Masculus Temporis' ("The Male Birth of Time"), a fragment which is also of early date, is perhaps a modification of previous work. It contains little more than an attack on the false fancies ("idols") of the older philosophies, and is Bacon's first plea for a rational union between the mind of man and the universe. The 'Conference of Pleasure' (written for Essex in 1592), 'Gesta Grayorum' (1594), and the 'Device on the Queen's Day' (1595) are not primarily philosophical works, but they contain many expressions of Bacon's intellectual ideals; and in the 'Gesta Grayorum' there is an elaborate proposal for the endowment of libraries, museums and establishments of research. 'Valerius Terminus, of the Interpretation of Nature, with the Annotations of Hermes Stella' (written about 1603) is a fragmentary treatise anticipating some of the most familiar matter in the later philosophical works. In it Bacon defends the study of science from the charge of impiety, urges the importance of an encyclopedic survey of human knowledge, and mentions for the first time (though without explaining them) the four classes of "idols" which were afterward discussed in the 'Novum Organum.' In 1605 Bacon presented to King James an English treatise of enduring value, 'The Advancement of Learning.' This was a splendid attempt to defend and magnify the pursuit of learning and then to survey the existing state of human knowledge. Part of the argument of the first part has lost its cogency, or even its relevancy, to-day. But in breadth of view and fertility of suggestion the work is extraordinary. As a statement of intellectual ideals, and a program, or even a prophecy, of their accomplishment, it stands among the most significant productions of the Renaissance. When Bacon sketched a few years later the plan of his 'Great Instauration,' he designated the 'Advancement of Learning,' as a temporary filling of the first place on the "partitiones scientiarum," and in his last years he made a greatly amplified Latin translation of it ('De Augmentis et Dignitate Scientiæ') to be incorporated in the great work. In 1606–07 he published the 'Outline and Argument' ('Delineatio et Argumentum') of the second part of the Instauration, giving a brief general account of his new induction. In 1607 the 'Cogitata et Visa de Interpretatione Naturæ, sive de Scientia Operativa' were published as an introduction to some investigations on motion. The 'Cogitata' cover most of the ground afterward traversed in the first book of the 'Novum Organum.' The 'Redargutio Philosophiarum' (1609), one of the best specimens of Bacon's Latin style, contains an imaginary speech of a French philosopher to his disciples, and sets forth anew the author's ideas about the fruitlessness of the older philosophies. The 'De Sapientia Veterum,' though it lies outside the immediate scheme of the 'Instauration' and might perhaps be mentioned rather among Bacon's literary works, is a very characteristic production containing an exposition of his theory of ancient mythology as an allegorical embodiment of moral and scientific wisdom. This primitive wisdom he was fond of extolling to the disparagement of the later philosophy of Aristotle, against which he was in revolt. In 1611 and 1612 fall a number of scientific treatises of less importance. Not until 1620, after his long struggle to political power and on the eve of his fall, did Bacon publish the 'Novum Organum,' though much of its material had been anticipated in his earlier writings. Prefixed to the work is a "distributio operis" for the whole 'Instauration,' which was planned to contain the following parts: 1. Partitiones Scientiarum (represented temporarily by the English 'Advancement of Learning'); 2. Novum Organum (the new instrument of inductive method); 3. Phænomena Universi; 4. Scala Intellectus (by which fanciful title he meant to indicate the operation of the new method in passing gradu-

ally from less general to more general principles «per scalam veram»); 5. Prodromi Philosophiæ Secundæ (to contain such tentative discoveries as Bacon had made without using the new method); 6. Philosophia Secunda, sive Scientia Activa (a final embodiment of the results of the new philosophy). The first book of the 'Novum Organum' was still introductory in character, discussing the uselessness of the older philosophies, the traditional errors of mankind, and the grounds of hope in the future of science. Bacon's optimistic devotion to science has been not ineptly compared with that of the young Renan. His classification of the «idols» (phantasms or delusions) of the tribe, the cave, the marketplace and the theatre, has become a literary commonplace. In the second book the new induction itself is finally expounded and illustrated by a study of the nature of heat. The exposition is incomplete and falls short, as in the nature of things it was bound to, of what Bacon himself apparently hoped to achieve, namely, a mechanical method of invention. Bacon never pursued the theory further, and in his later works he turned from the new method, or instrument, toward other parts of his great scheme. The 'Parasceve ad Historiam Naturalem' (1620) is a brief and incomplete preparation for the third part of the Instauration, and was followed in 1622 by the 'Natural and Experimental History for the Foundations of Philosophy, or Phenomena of the Universe, being the Third Part of the Great Instauration.' This treatise which was to take up winds, density and rarity, gravity, sympathy and antipathy of things, and a variety of other topics, was also left in a fragmentary state. In 1623 appeared the 'De Augmentis,' which was to supersede the English 'Advancement of Learning' as the first portion of the Instauration. Probably about 1624 Bacon wrote the 'Sylva Sylvarum' (publish in 1627), an ill-classified collection of materials for natural history. Its contents belong in considerable degree to the realm of folklore and superstition, and Bacon's detractors have found in the work some of their best grounds of attack on his character as a man of science. It was his belief, however, stated in the 'Advancement of Learning,' that a collection and comparison even of the erroneous opinions of mankind might give useful guidance in the pursuit of truth. Under the titles 'Scala Intellectus' and 'Prodromi sive Anticipationes Philosophiæ Secundæ' Bacon wrote at a later, but uncertain, date two mere prefaces which filled the fourth and fifth gaps in the 'Instauration.' They were his last philosophical writings.

Bacon's position in the history of science and of philosophy has been very differently estimated. He constructed no philosophical system, and one would search his writings in vain for much discussion of the great problems which have divided the schools of metaphysics since Descartes. As a man of science his shortcomings are still more notable.. He was commonly unsuccessful in his own investigations and ill-informed about the best work of his contemporaries. He was hardly possessed at all of what is now understood by the scientific mind. Yet there is much justification for the traditional view of him as the father of modern philosophy and the primary instigator of modern scientific progress. If not the originator, he made himself at least the leading exponent of the revolt against the Aristotelian, or more properly the scholastic, tradition, and he profoundly influenced the English realists of the next generations. In ethics his distinction between «individual or self-good» and «good of communion» points forward to the doctrine of the later utilitarians. And science certainly owed him a large debt for the formulation and urgent presentation of the «new induction.» No one, of course, will maintain that Bacon invented induction. Macaulay, in his familiar account of the plain man and the minced pies, has made some sport of his claims to originality in this matter. But a more judicious estimate would recognize the high and lasting educational value of the 'Novum Organum.' And Bacon's broad outlook and fertile imagination enabled him to lay down the lines of scientific progress and to win recruits for the work. He furnished his followers not only with an improved method, but also with a more vital aim — that of practical service. In his revolt against Aristotle and the schoolmen he constantly dwelt upon the fruitlessness of the earlier philosophies, and one of the most eloquent passages in the 'Advancement of Learning' sets forth the ideal of human service as the goal of scientific effort. This aim has come to be called Baconian, so much so that Bacon is often charged with having ignored or denied the more purely intellectual purposes. But the charge is extreme. He thought it wise, in view of the sentiment of his time, to emphasize particularly the practical aim; but he recognized *veritas* and *utilitas* ('Novum Organum' I, Ap. 124) as co-ordinate ends of study. Finally, in spite of his deficiencies in investigation, Bacon made some noteworthy discoveries in pure science. His explanation of heat as a mode of motion is quoted by Tyndall as a striking anticipation of the modern doctrine. On the whole, however, it was as a prophet or leader, rather than as a productive scholar, that Bacon served learning best.

By far the greater part of Bacon's writings (apart from his state papers, legal works and copious personal memoranda) dealt with philosophy and science, and bore directly or indirectly upon the construction of the 'Great Instauration.' Some of his more important state papers have been already mentioned in the account of his life. His strictly professional writings (treatises on English law) will be found in the seventh volume of the Spedding and Ellis edition of his collected works. His personal memoranda, which permit an intimate view of his life and character, are published in Spedding's 'Letters and Life' (the highly characteristic 'Commentarius Solutus,' of the year 1608, in the fourth volume). Besides all these productions of his scholarship and his professional life he made eminent contributions to history and to pure letters. His 'History of Henry VII' (1621), which has been accepted by later scholars as essentially sound, ranks with the best historical writing of its age in England. Bacon wrote also a memorial of Elizabeth ('In Felicem Memoriam Elizabethæ') (1607), another of Henry, Prince of Wales, who died in 1612, and fragments on the reign of Henry VIII and on the accession of James I.

In pure literature Bacon's reputation rests chiefly on three works: the 'Advancement of Learning' (which has been already discussed), the 'Essays' and the 'New Atlantis.' The first two of these, curiously enough, he translated, or had translated, into Latin in order to secure them a wider and more permanent public. The 'New Atlantis' (first published by Rawley in 1627, but probably written between 1622 and 1624), is a fragmentary sketch of an ideal commonwealth, and in particular of an ideal "palace of invention" called "Solomon's House,"—a great establishment of scientific research such as Bacon longed to see founded. The book, which expresses the idealistic spirit of the Renaissance, shows Bacon at his best. The description of Solomon's house is said to have led to the establishment of the Royal Society. The 'Essays,' which were designed to "come home to men's business and bosoms," are better known than anything else that Bacon wrote. They deal with many subjects and are characterized by ripe reflection and consummate mastery of style. Bacon had them in hand during the greater part of his mature life. He published the first edition in 1597, and twice revised and enlarged the collection (in 1612 and 1625). The title is supposed to have been suggested by the 'Essais' of Montaigne, and there are occasional resemblances between the two works in subject matter; but Bacon was not largely indebted to any source, and his conception of the essay was totally different from the personal and leisurely discourses of Montaigne. "Brief thoughts, set down rather significantly than curiously," was his own characterization of them in the dedication of the second edition; and although some of the later essays contain passages of adorned and sustained eloquence such as were lacking in the earlier ones, the general type was maintained to the end.

A small number of religious works, in elevated thought and style, remain to be mentioned: the 'Meditationes Sacræ' (published in 1597), the 'Confession of Faith' (written before 1603), several prayers, and Bacon's only accredited verse, 'A Translation of Certain Psalms into English Verse' (1624). A poem on 'The World,'—"The world's a bubble, and the life of man less than a span,"—is sometimes ascribed to him, but is of doubtful authorship. See Essays of Bacon.

**Bibliography.**—The dates of Bacon's chief works have been mentioned in the body of the article. The standard collected edition is that of Spedding, Ellis and Heath (London 1857–59). Single works have in several cases been published separately with more elaborate annotation; among the best of such editions being the 'Novum Organum' by T. Fowler (Oxford 1878), the 'Advancement of Learning' by W. A. Wright (Oxford 1896), the 'Essays' by Archbishop Whately (London 1856), E. A. Abbott (London 1896) and S. H. Reynolds (Oxford 1890), and the 'New Atlantis' by G. C. Moore Smith (Cambridge 1900). A useful reprint of the three editions of the 'Essays' has been published by Edward Arber, English Reprints, No. 27 (1871). For the life of Bacon the great source of original materials is Spedding's 'Letters and Life of Bacon' (7 vols., 1861). A brief digest of the material was issued in two volumes, 'The Life and Times of Francis Bacon' (Trübner 1878). Short biographies of value have been written by R. W. Church, 'Francis Bacon' (London 1884). Thomas Fowler, 'Francis Bacon' (New York 1881), E. A. Abbott, 'Francis Bacon, an Account of His Life and Works' (London 1885), S. R. Gardiner (in the 'Dictionary of National Biography'), and John Nichol, 'Francis Bacon, His Life and Philosophy' (London 1898–99). Macaulay's essay on Bacon furnishes a brilliant though by no means just or satisfactory estimate of the man and his work. On Bacon's philosophical doctrines and influence one should consult, besides the standard histories of philosophy, Ellis's general introduction to the philosophical works, Kuno Fischer's 'Francis Bacon of Verulam: Realistic Philosophy and Its Age' (Engl. translation by John Oxenford 1857), Fowler's elaborate commentary on the 'Novum Organum' and his 'Francis Bacon.' The history of Bacon's reputation and influence is treated with some fullness in Dr. Fowler's introduction to the 'Novum Organum.' An idea of the arguments of Bacon's adverse critics can be derived from Joseph de Maistre, 'Examen de la Philosophie de Bacon' (Paris 1836), Sir David Brewster, 'Memoirs of the Life, Writings, and Discourses of Sir Isaac Newton' (Edinburgh 1855), and Justus von Liebig, 'Ueber Francis Bacon von Verulam und die Methode der Naturforschung' (Munich 1863) More recent studies are: Booth, W. S., 'Some Acrostic Signatures of Francis Bacon' (Boston 1909) and Cunningham, G. C., 'Did Bacon Die in 1626?' (Baconiana, series 3, London 1916).

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**BACON, Henry,** American architect: b. Watseka, Ill., 28 Nov. 1866. He was graduated at the University of Illinois in 1888, where he won the Rotch traveling scholarship, under which he spent two years in study in Europe. From 1888 to 1897, with the exception of 1890–91, he was with the firm of McKim, Mead and White. In 1897 he helped form the firm of Brite and Bacon. Since 1903 he has practised alone. He has designed several important buildings and was the winner in the competition for the Lincoln Memorial at Washington in 1913. He is a fellow of the American Institute of Architects and member of the National Institute of Arts and Letters.

**BACON, John,** English sculptor: b. London 1740; d. 4 Aug. 1799. In early life he was employed in modelling small porcelain ornaments, and while yet an apprentice he formed a project for making statues of artificial stone. In 1763 he began to work in marble; and shortly afterward invented an instrument for transferring the form of the model to the marble. In 1768 he became a student of the Royal Academy, and next year he obtained the first gold medal for sculpture given by that society; the following year he was chosen an associate, and in 1778 made a full member. His chief works are two groups for the interior of the Royal Academy, the statue of Judge Blackstone for All Souls' College, Oxford; another of Henry VI for Eton College; the monument of Lord Chatham in Westminster Abbey; and the statues of Dr. Johnson and the philanthropist Howard in Saint Paul's Cathedral.

**BACON, John Edmund,** American lawyer: b. Edgefield, S. C., 3 March 1832; d. Columbia, S. C., 19 Feb. 1897. He was graduated at South Carolina College, 1851; Litchfield (Conn.) Law School, and admitted to the bar, 1854. He was secretary of the United States legation at Saint Petersburg, and married a daughter of ex-Governor Pickens, then Minister to Russia. He resigned in 1860, entered the Confederate army, and rose to the rank of major. He was one of the negotiators for the restoration of South Carolina to the Union, 1866; and to him was chiefly due the reopening of South Carolina College by act of the legislature in 1873. In 1886 he was appointed chargé d'affaires in Uruguay and Paraguay.

**BACON, John Mackenzie,** English clergyman and scientist: b. 1846; d. 1904. He was educated at Trinity College, Cambridge, and entered the ministry of the Church of England in 1870. In 1889 his publication, 'The Curse of Conventionalism: a Remonstrance by a Priest of the Church of England,' caused widespread opposition and led to his retirement from the ministry. He at once entered on the study of astronomy and aeronautics. He led two eclipse expeditions of the British Astronomical Association — that to Buxar, India, in 1898, and that to Wadesboro, N. C., in 1900. He made a record voyage in English ballooning in 1899. He demonstrated that sound travels more rapidly downward than upward, and that the ocean floor is visible from great heights and can be photographed. His 'By Land and Sky' (1900) contains accounts of his ballooning investigations and the results of his experiments in acoustics, meteorology and other subjects. He published also 'The Dominion of the Air' (1902).

**BACON, John Mosby,** American military officer: b. Kentucky, 17 April 1844; d. Portland, Ore., 19 March 1913. He served in the Union army through the Civil War; was appointed captain in the 9th United States Cavalry, in 1866, and colonel of the 8th Cavalry in 1897. On 4 May 1898, he was appointed brigadier-general of volunteers and placed in command of the Department of Dakota. Subsequently, he was assigned to duty in Cuba, till 8 May 1899. He was retired in 1902.

**BACON, Josephine Dodge Daskam,** American author: b. Stamford, Conn., 17 Feb. 1876. She was graduated at Smith College, A.B., 1898, being class orator on graduation, and while in college was editor-in-chief of the *Smith College Monthly*. Since graduation has been continuously occupied with literature as contributor of stories and poems to magazines, and as author of books: 'Sister's Vocation, and Other Stories' (1900); 'Smith College Stories' (1900); 'The Imp and the Angel' (1901); 'Fables for the Fair' (1901); 'Whom the Gods Destroyed' (1902); 'Poems) (1903); 'Middle-Aged Love Stories' (1903); 'Memoirs of a Baby' (1904); 'Domestic Adventures' (1907); 'Ten to Seventeen' (1907); 'An Idyll of All Fools' Day' (1908); 'Margarite's Soul' (1909); 'In the Border Country' (1909); 'The Biography of a Boy' (1910); 'While Caroline was Growing' (1911); 'The Inheritance' (1912); 'The Strange Case of Dr. Stanchon' (1913); 'To-day's Daughter' (1914); 'Open Market' (1915). She also compiled 'Best Nonsense Verse' (1901).

**BACON, Leonard,** American clergyman: b. Detroit, Mich., 19 Feb. 1802; d. 24 Dec. 1881. He was graduated at Yale in 1820, and studied theology at Andover, Mass. In 1825 he became pastor of the First Congregational Church in New Haven, a post which he held officially, though not always actively, until his death. He was professor of didactic theology in Yale (1866–71). He was throughout his life an active opponent of slavery. In 1847 he joined with Drs. Storrs and Thompson to found the New York *Independent*, in the joint editorship of which he continued for 16 years. Besides a vast number of reviews and pamphlets, he published 'Views and Reviews' (1840); 'Slavery Discussed in Occasional Essays' (1846); and 'Genesis of the New England Churches.'

**BACON, Leonard Woolsey,** American clergyman: b. New Haven, Conn., 1830; d. 1907. A son of Leonard Bacon, he was graduated at Yale in 1850, and was successively pastor of Congregational churches in Litchfield, Conn., Brooklyn, N. Y., and Stamford, Conn. He spent several years in Europe, and was engaged in Geneva as a student, preacher and writer. He returned to America in 1878, and from that year until 1882 was pastor of the Park Congregational Church of Norwich, Conn., and subsequently of other Congregational and Presbyterian churches. He edited Luther's 'Deutsche geistliche Lieder' (New York 1883), and published 'A Life Worth Living: Life of Emily Bliss Gould' (1878); 'Irenics and Polemics, with Sundry Essays in Church History' (1898); 'History of the American Christianity' (1898); 'Young People's Societies,' with C. A. Northrup (1900); 'The Congregationalists' (1904).

**BACON, Nathaniel,** American insurrectionary leader: b. Friston Hall, Suffolk, England, 2 Jan. 1642; d. 26 Oct. 1676. His great-grandfather was cousin to Lord Bacon; his mother, a Brooke, was daughter of a Suffolk knight. He entered Saint Catherine's College, Cambridge, in 1660; took M.A. 1667; studied law at Gray's Inn, London, and traveled on the Continent. He found life too straitened in England on the income his father allowed him, and the latter gave him £1,800 outright to emigrate to Virginia, where his cousin, Nicholas Bacon, had been living since 1650. He arrived in the latter part of 1673 with a young wife, daughter of Sir Edward Duke, and soon became a member of the governor's council, as was his cousin; and settled on a plantation some 20 miles below Richmond, on the James, called "Curle's Wharf." He also had another on a part of the site of Richmond, the attack on which by the Indians was part of the raid that brought on the imbroglio known as "Bacon's Rebellion," which see for his career and fate.

**BACON, Sir Nicholas,** English statesman and father of Francis Bacon: b. Chislehurst, 1509; d. 1579. He was graduated at Corpus Christi College, Cambridge, in 1527, and was called to the bar in 1533. He received a large property from confiscated monastery lands and was appointed attorney to the Court of Wards and Liveries. He stood in high favor with Edward VI, and although he was a stanch

Protestant, was not persecuted and even retained his office of attorney during the reign of Mary. From 1558 to 1579 he was Lord High Chancellor and Keeper of the Great Seal under Elizabeth. By virtue of his office he presided over Elizabeth's first Parliament. He took a prominent part in the debates preceding the Act of Supremacy. He generally supported the policies of Cecil, his brother-in-law, although at times in favor of a stronger Protestant policy. His able qualities as a statesman were invaluable at the critical period in English history when Elizabeth succeeded to the throne.

**BACON, Robert,** American financier and diplomat: b. Boston, Mass., 5 July 1860. He was graduated at Harvard in 1880, and soon after entered the banking firm of Lee, Higginson & Company of Boston; from 1883 to 1894 he was a member of the firm of E. Rollins Morse & Brother and of J. P. Morgan & Company from 1894 to 1903, when he retired from active business life. He had been long a close student of foreign affairs and in 1905 was appointed first assistant Secretary of State under Elihu Root. When the latter entered the Senate in 1909 Mr. Bacon became Secretary of State, and in the same year was named by President Taft Ambassador to France, serving from 1909 to 1912. He was a member of the board of overseers of Harvard University, 1889–1901 and 1902–08, and was made a fellow of the University in 1912.

**BACON, Roger,** English monk and philosopher: b. near Ilchester about 1214; d. 1294. He first entered the University of Oxford, and afterward went to that of Paris, where he seems to have distinguished himself much by successful study and teaching, and received the degree of doctor of theology. About 1250 he returned to England, where he entered the order of Franciscans, fixed his abode at Oxford, and devoted himself to his studies in natural philosophy, chiefly in alchemy, chemistry and optics. Means were furnished him by generous friends of science, whose contributions enabled him to purchase books, to prepare instruments and to make the necessary experiments. In examining the secrets of nature he made discoveries and deducted results which appeared so extraordinary to the ignorant, that they were believed to be works of magic and he was brought under suspicion as a dealer in the black art. There is clear evidence in his writings that he accepted the Aristotelian theory of stellar influence on the minds and wills of men, not indeed directly, but through the medium of the body. Such views brought him into conflict with the teachings of the Church on free will, and in 1257 he was sent to Paris, where he was kept in confinement for 10 years. In 1267 Bacon wrote a work under the title of 'Opus Majus,'—see article following—giving a connected view of the different branches of human knowledge, supplemented soon after by two other works, namely, 'Opus Secundum' and 'Opus Tertium.' Under Clement's successor, Nicholas III, the general of the Franciscans, Jerome of Ascoli, declared himself against Bacon, forbade the reading of his writings, and issued an order for his imprisonment, which was confirmed by the Pope. This new confinement lasted from 1278–92; and when Jerome of Ascoli was elected Pope, under the name of Nicholas IV, Bacon vainly endeavored to convince him of the innocence and utility of his labors, by sending him a treatise 'On the Means of Avoiding the Infirmities of Old Age.' After the death of Nicholas IV he regained his liberty, and returned to Oxford, where he wrote a 'Compendium of Theology' (1292).

Though an extraordinary man, Bacon was a child of his age, and not free from current errors. He believed in the philosopher's stone and in astrology. There are to be found in his writings new and ingenious views on optics; for example, on the refraction of light, on the apparent magnitude of objects, on the magnified appearance of the sun and moon when in the horizon, etc. He describes very exactly the nature and effects of convex and concave lenses, and speaks of their application to the purposes of reading, and of viewing distant objects, both terrestrial and celestial; and it is easy to prove from his writings that he was either the inventor or improver of the telescope. He also gives descriptions of the *camera obscura,* and of the burning-glass. He also made several medical discoveries. The discovery of gunpowder has been attributed to him. His writings contain the chemical formula for it, but it is generally supposed that he obtained it from the Arabs, from whose writings he derived other suggestions. He was acquainted with geography and astronomy, discovered the errors of the calendar and their causes, and made a corrected calendar. In moral philosophy, also, Bacon laid down some excellent precepts. His principal works, edited by Professor Brewer, were published in his 'Opera Inedita' (1859).

**BACON, Roger, his Opus Majus** (1267 A.D.). Newly edited and published with introduction and full English analysis of the Latin text, by J. H. Bridges (2 vols., 1897). An adequate publication after 630 years of one of the most remarkable productions of the human mind. The work is an exhortation addressed to Pope Clement urging him to initiate a reform of Christian education in order to establish the ascendency of the Roman Catholic Church over all nations and religions of the world. Its central theme was the consolidation of the Roman Catholic faith as the supreme agency for the civilization of mankind. Its author wished to see recognition of "all the sciences," since all are part of one and the same complete wisdom. He first gave experiment the distinct and supreme place which was later revived by Descartes, and carried out in modern science. He formed a clear conception of chemistry, in his day not yet separated from alchemy; and of a science of living things, as resulting with chemistry from physics. In the part of his work dealing with moral philosophy, Bacon makes the first attempt ever made at the comparative study of the religions of the world. His protests against the intellectual prejudices of the time, his forecasts of an age of industry and invention, the prominence given to experiment, alike as to the test of received opinion and the guide to new fields of discovery, render comparison with Francis Bacon unavoidable. In wealth of words, in brilliancy of imagination, Francis Bacon was immeasurably his

superior. But Roger Bacon had the sounder estimate and the firmer grasp of that combination of deductive with inductive method which marks the scientific discovery.

**BA-CÓN**, Philippine Islands, a town in the province of Albay, Island of Luzon. Pop. about 14,540.

**BACON**, the name given the sides of a pig which have been cured or preserved by salting with salt and saltpetre, and afterward drying with or without wood smoke. By the old process of rubbing in the saline mixture, the curing occupied from three to four months. The method now adopted on a larger scale is to place the prepared flitches in a fluid pickle. The pickling, drying and smoking now occupy not more than six weeks. Bacon may be called the poor as well as the rich man's food. By the former it is prized as a necessary of life; by the latter, for its exquisite flavor. The nitrogenous, or flesh-forming, matter in bacon is small, one pound yielding less than one ounce of dry, muscular substance, while the amount of carbon compounds, or heat givers, is large, exceeding 60 per cent. Its digestibility, however, owing to the large proportion of fat it contains, is not less than that of beef or mutton.

**BACON BEETLE** (*Dermestes lardarius*), an insect, the larva of which destroys bacon, lard and furs.

**BACONIAN PHILOSOPHY**, the inductive philosophy of which it is sometimes said that Lord Bacon (q.v.) was the founder. This, however, is an exaggerated statement. What Lord Bacon did for this mode of ratiocination was to elucidate and systematize it; to point out its great value, and to bring it prominently before men's notice; lending it the support of his great name at a time when most of his contemporaries were satisfied with the barren logic of the schools. The triumphs of modern science have arisen from a resolute adherence on the part of its votaries to the Baconian method of inquiry.

**BACON'S REBELLION**, in Virginia, 1676. The English Navigation Acts of 1651 and 1660, restricting colonial trade to English vessels, had produced universal distress in Virginia, forcing it to buy and sell to the home monopolists at their own price; tobacco, not only the chief produce, but the chief currency, became almost worthless. In 1667 the smaller landholders were reported on the brink of rebellion, and in 1673 there were meetings to refuse payment of taxes. Meantime the corrupt civil service of the colony, place-hunters sent over by Charles II to be rid of them, were plundering the planters by means of the export dues, in collusion with the governor, Sir William Berkeley (q.v.); and the latter was fattening on a fur trade with the Indians. To save himself from the opposition of criticism of the masses whom he hated and despised, and to perpetuate the oligarchy of the small group of rich planters who formed his council, he kept his legislature of 1662,— strongly royalist from the enthusiasm of the Restoration,— in office till 1676 by annual adjournments without new elections; he had also abolished universal suffrage and substituted a property qualification. This built up a strong opposition, including some of the most solid citizens. In 1675 a terrible Indian war broke out, wrapping the frontier in fire and blood; 36 whites were murdered in one day of January 1676. Berkeley, implored to protect the settlements, ordered out a force under Sir Henry Chicheley, then suddenly dissolved it, recalled Chicheley's commission and refused to do anything more till the assembly met in March. The result was frightful: within 17 days 60 of the 71 plantations in Rappahannock parish were destroyed, and by the time of the March meeting, over 300 victims had perished, a large part by fiendish tortures. Even then, under Berkeley's orders, the «Long Assembly» (so called in allusion to the Long Parliament) merely committed another outrage: instead of authorizing an army, they authorized frontier forts, to have a garrison of 500 soldiers (from the seaboard counties, not the frontier one which suffered from the Indians, and hated the governor). No attack on the Indians was to be permitted except under specific orders from the governor. Two million pounds of tobacco more were added to their taxes for this mockery of protection, and most of that was embezzled and the forts built so as to be worthless even for the little service they could do. The people petitioned for leave to form expeditions at their own charge under any leader Berkeley might appoint; he forbade any further petitions of the sort under heavy penalties. It was the universal belief that his one solicitude was to save his Indian trade monopoly from harm. Finally the people of Charles City County petitioned once more for leave, in face of actual ravages then going on; and once more the obstinate and avaricious old man refused it. Men could bear no more; they raised 300 volunteers on their own risk and by acclamation placed at their head Nathaniel Bacon (q.v.), a young planter recently from England, and one of the governor's council. He accepted it and wrote to Berkeley for a commission; Berkeley returned an evasive answer and Bacon started on his expedition without it. Berkeley hearing of it sent an order for the company to disperse; all but a few, however, kept on and dispersed the Indians. Berkeley collected a troop of horsemen, and set out to arrest Bacon, when he heard that the colony was all in revolt behind him; and he hurried back to Jamestown, dissolved his 14-year-old assembly and issued writs for a new one. Despite his suffrage restriction, there was a very heavy majority against him; Bacon being one of the new members. As the latter approached Jamestown, he was arrested and brought before Berkeley, who, in view of the uprising, did not dare proceed to extremities, but paroled him, and on Bacon's making submission for attacking the Indians without license allowed him to take his seat, with a tacit agreement to give him his commission to finish the Indian war. The new legislature, besides restoring universal suffrage and making other reforms very distasteful to Berkeley, provided for raising an army of 1,000 men for Indian service. But Bacon, still refused the commission, and privately warned that his life was in danger, fled, shortly returned with 600 men, and forced Berkeley to sign his commission as major-general for the Indian campaign, and also a memorial to the King in his favor and

reciting the colonial grievances. This latter was sent off with a secret note from Berkeley, disavowing it. Bacon within a month had nearly put down the Indian outbreak, especially by a crushing victory at Bloody Run (near Richmond), when he heard that the governor had proclaimed him and his party rebels, and to escape popular wrath had fled across the peninsula to Accomac. Bacon marched back to Middle Plantation (the site of Williamsburg), launched a manifesto against Berkeley, and drew around him a gathering of some prominent men and a vast number of penniless ones (for the movement was largely a democratic revolt against an overweening aristocracy). They agreed to stand by him even against a royal army; feeling that they were compromised beyond retreat at best, and hoping to hold out till the King could be correctly informed and pardon them. Bacon carried on the Indian campaign till September, thoroughly stamping out the danger to the colony; meantime sending an expedition to capture Berkeley, which was itself captured. Berkeley gathered about 1,000 militia by promising them the confiscated estates of the rebels, and reoccupied Jamestown; Bacon marched against him, drove him to Accomac once more, and burnt Jamestown to the ground. But he had taken malaria there, and while invading Gloucester County to attack Major Brent was stricken down, and died 26 October. The rebellion at once collapsed, and Berkeley wreaked a frightful vengeance upon Bacon's adherents. See BERKELEY, SIR WILLIAM. For authorities, besides new documents published in *Virginia Magazine of History* (1893–98), consult the *Century Magazine*, Vol. XL, under "Under Nathaniel Bacon," by Edward Eggleston; and John Fiske's 'Old Virginia and Her Neighbors,' 1897, Vol. II).

**BACOOR**, bä'kō-ōr', Philippine Islands, a town of the province of Cavite, on the island of Luzon. Pop. about 12,600.

**BACSANYI**, bŏ'chän-ye, **Janos**, Hungarian poet: b. Tapolcza, 11 May 1763; d. 12 May 1845. His first work, published in 1785, procured him an appointment in a public office, but a liberal poem cost him this in 1793, as well as his liberty the year after. Some of his finest elegies were composed in prison. In 1796 he went to Vienna, and there he married a few years later the German poet, Gabrielle Baumgarten — an unhappy match. In 1809, Bacsanyi fell under suspicion of translating Napoleon's proclamation to the Hungarians, and was afterward obliged to take refuge in Paris. After the Peace of Paris he lived at Linz, where he died. His collected poems appeared at Budapest in 1827.

**BACTERIA.** Literally the word bacterium, bacteria being its plural, means a tiny rod or stick. As understood, however, by biologists, bacteria constitute a genius of lowly organized microscopic plants having forms other than that indicated by the literal meaning of the word. Briefly defined, bacteria are unicellular vegetables that multiply by the simple process of transverse division — they are, therefore, schizomycetes. In size they are all of microscopic dimensions requiring in most cases to be magnified from 600 to 1,000 diameters before becoming visible and even then they appear in many instances as scarcely more than tiny points. As encountered in nature they assume a variety of forms which may be conveniently arranged into three principal groups, namely: the spherical, the rod-like and the spiral. To the spherical forms the name *cocci* or *micrococci* (*coccus*, singular) is given, and, according to the manner in which these tiny spheres develop and their progeny adhere to one another they are further severally designated as *staphylococci*, that is, cocci clustering irregularly together like grapes in a bunch; *streptococci*, that is, cocci adhering together like beads or pearls in a strand; *diplo-cocci*, that is, cocci occurring in pairs; *tetracocci*, that is, cocci clustered in fours, etc.

To the rod-like group — that is, those which are straight, having one diameter longer than another — the designation *bacilli* (*bacillus*, singular) is given. While the structure and mode of multiplication of many of the bacilli is as simple as is that of the micrococci — that is, one cell divides into two, two into four, and so on *ad infinitum*, without variation it is nevertheless in the group of bacilli that we encounter a number of species provided by nature with a more highly organized and complicated means for propagation and perpetuation. It is here that we encounter species in the course of whose life cycle there develops within each rod a single tiny, oval, highly resistant body, a spore as it is called, which may be fairly compared to the seeds of higher plants and which, like the seed, may be gathered and kept for almost indefinite periods, without losing their power of germination. Since such spores of bacteria are markedly tenacious of life even under the most unfavorable of circumstances it is obvious that the power to form spores is an important provision for the preservation of the species. It is of passing interest to know that the ability to form spores is possessed by some, but not many of the disease-producing bacteria, a fact that serves to explain in part the difficulties experienced by the sanitarian in eliminating certain types of infection; for it must be remembered that the infective species capable of entering the spore stage are by virtue of that property much less vulnerable to the action of disinfectants and disinfecting processes than are the species not so endowed.

The spiral forms, *spirilla*, as they are called, comprise those bacteria having one or more curves in their long axis, that is, those that are twisted like a corkscrew. They are sometimes seen as homogeneous, long spiral threads without segmentations, while again they may consist of short curved segments adhering end to end. Spore formation is not a characteristic of the spiral bacteria.

In structure bacteria are non-nucleated masses of protoplasm surrounded by an enveloping zone appearing in some instances to be but a condensation of the central protoplasm, while in others it partakes somewhat of the nature of mucin. Many of the bacteria exhibit no evidence of independent mobility, while others, by virtue of special locomotive apparatus (*flagella*) move themselves about in fluids in a most energetic manner. As their structure is exceedingly simple, in so far as formed elements are concerned, their mode of nutrition is, physically speaking, correspondingly simple

— that is, the nourishment is absorbed and their waste products discharged directly through their enveloping membranes by the process of osmosis. This being the case it is obvious that bacteria can multiply and perform their physiological functions only under conditions of moisture. Unlike the more highly organized plants bacteria are apparently without special provisions for gaseous exchange, that is, they are devoid of chlorophyl. They obtain their oxygen as such from the free air or from easily decomposable oxygen compounds. In the course of his early investigations in this field Pasteur discovered a group of bacteria that have ever proven to be of the greatest interest — a group that, paradoxical as it may seem, not only does not require free oxygen for its life processes but to the growth of which free oxygen is actually prohibitive. To these species he gave the designation *anærobic* to distinguish them from the majority, the *ærobic* varieties, to which free oxygen is essential. In their relations to higher life bacteria may be regarded as allies or as enemies, according to the nature of the species under consideration. Contrary to notions that have been more or less prevalent the majority of bacteria have nothing to do with disease production. Their natural rôle is that of scavengers. They are concerned in nature's great laboratory, the soil, in working over dead organic matters into forms appropriate to the nourishment of growing vegetation. Since in the course of this conversion dead bodies that would otherwise encumber the earth are caused to disappear they must from both the æsthetic and economic standpoints be regarded as, in the main, benefactors. In this group of *saprophytic* bacteria, as they are called, that is, those that live on dead matters, we encounter species of the greatest interest and importance. It is here that we perceive the omnipresent forms concerned in the reduction of dead animal and vegetable tissues into such simple forms as carbon dioxide, ammonia and water to be used by higher plants. It is in this group that we find the ever-present nitrifying, denitrifying and nitrogen fixing species — that is, those peculiar ferments that assist the leguminous plants in assimilating free atmospheric nitrogen; those that oxidize the ammonia of decomposition to the nitrous and nitric acids so essential to plant life, and those that, by their reducing function, reverse this phenomenon; those that convert the objectionable organic matter of sewage and polluted waters into an inert inorganic form and those that, through their specific activities, supply, where circumstances are favorable, the entire commercial world with its supply of saltpetre.

The saprophytic group also comprehends many species used in the arts and industries — such, for instance, as those concerned in the production of certain organic acids; those employed in the manufacture of indigo by the fermentation process and in the preparation of hemp; and those utilized in the manufacture of cheese and butter. In the study of this large group one constantly encounters other species presenting most engaging characteristics — some of these, the *chromogenic* varieties, have the property of producing during the course of their growth pigments of great beauty — brilliant reds, delicate pinks, rich purples, yellows ranging from the palest lemon to the deepest orange, are those most often encountered. In another group, the *photogenic*, we meet with species having the emission of light as their most singular peculiarity. When growing these forms glow with a peculiar phosphorescence, and it is significant to note that these luminous varieties have been most frequently encountered in the sea and upon articles from the sea. The evil odors of putrefaction are the results of saprophytic bacterial development. In the *parasitic* group of bacteria we encounter those species that exist always at the expense of a living host, either animal or vegetable, and in doing so not only appropriate materials necessary to life, but give off in return waste products that may act as direct poison to the host. Fortunately this is a much smaller group than is the saprophytic mentioned above. In no particulars, save for their ability to exist at the expense of a living host and cause disease, are the disease-producing bacteria distinguishable from the innocent varieties. The essential difference between the disease-producing and the innocent bacteria species is that the former possess as their most striking physiological peculiarity the power of elaborating poisons, *toxins*, technically speaking, that have a direct destructive action upon the tissues of their host. In some cases the poisons may properly be regarded as secretions of the bacteria, and, under artificial conditions of cultivation, may easily be separated from the living bacteria elaborating them. This is especially true of the poisons of diphtheria and tetanus or lock-jaw. When thus separated such poisons, entirely independent of the living bacteria, retain the specific property of causing the symptoms and many of the pathological changes that characterize the growth of the living bacteria in the tissues. In other cases the poisons cannot be so readily separated; they appear to be an integral constituent of the protoplasm of which the bacteria are composed. This is especially the case with the toxins of *bacillus typhosus*, *bacillus dysenteriæ* and *spirillum choleræ Asiaticæ* — the organisms concerned in the causation of typhoid fever, epidemic dysentery and Asiatic cholera, respectively. In the case of still other pathogenic species there is little doubt that specific intoxicants are in one way or another elaborated during infection, but as yet they have not been satisfactorily demonstrated. Nevertheless, it may be said that, in general, infection by bacteria is to-day regarded as essentially a chemical phenomenon — that is, as a reaction between the poisons elaborated by the bacteria and the tissues with which they come in contact; the result of the reaction being the partial or complete death of the host in which the phenomenon is in operation.

**Bibliography.**— Newman, 'Bacteria'; Lipman, 'Bacteria in Relation to Country Life'; Slater and Spitta, 'An Atlas of Bacteriology'; G. Sims Woodhead, M.D., 'Bacteria and Their Products.'

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**BACTERICIDE,** any agent capable of killing bacteria. The older terms, antiseptic, germicide, etc., cover too broad a field, and the word bactericidal has come to mean something more definite and exact than the older terms.

Heat is one of the best bacterial agents. Cold is not bactericidal. Even the lowest temperatures do not destroy the life of bacteria. The metallic salts and the phenols are the bactericidal agents most in use. The aldehydes, formaldehydes, benzyaldehydes are also efficient. See ANTISEPTIC; GERMICIDES.

**BACTERIOLOGY.** Though generally considered a modern science, and perhaps properly as regards certain of its most important developmental aspects, bacteriology in reality dates from the observations of the Dutch investigator Leeuwenhoek in the latter part of the 17th century. With simple lenses ground by himself, Leeuwenhoek discovered in the mouth, in the excreta, in water and in other matters examined by him, the presence of countless bodies of smaller dimensions than anything hitherto seen. These «animalcules,» as he called them, were often observed to move themselves about in a remarkably energetic manner, and, judging from his text and illustrations, they were doubtless the bodies we now recognize as bacteria. Leeuwenhoek's observations were immediately seized upon by the philosophers of the day as offering an explanation for many hitherto unexplained phenomena. So general became the belief in a casual relation between the «animalcules» and all manner of disease conditions that for a time, we are told, there prevailed almost a «germ mania.»

To the investigators of the time the question of greatest fascination in connection with this newly-discovered world was as to its origin. Many believed and stoutly maintained that the «animalcules» were the products of metamorphosis of either living or dead tissues of more highly organized beings; others that they arose *de novo* in «putrescent atmospheres»; many suspected them of spontaneous generation in some other mysterious way; while a few maintained, on experimental evidence, that they were probably the descendants of pre-existing creatures of the same kind. Singular as it may seem it took nearly two centuries to close finally that debate and to prove that the dictum of Harvey «*omne vivum ex ovo*» or better, its appropriate modification «*omne vivum ex vivo*» was as applicable to the microscopic as to the world of higher beings. In its modern aspect bacteriology dates from the epoch-making investigations especially of Koch and of Pasteur conducted during the 8th decade of the 19th century. During that period observations were made and methods of work devised that went far toward starting the subject on its career as a science. In the study of bacteria, as of all other forms of life, it is essential to a correct interpretation of form and physiological function that the observations be made upon isolated species. Prior to the period mentioned this was not possible, for the methods in vogue were insufficient for the separation of these minute creatures from one another. For the development of the science probably the most important step was, therefore, the introduction by Koch of trustworthy methods for the separation of individual bacterial species from mixtures of them, and for the more or less complete determination of their specific morphological and physiological peculiarities; that is, for the isolation and study of bacteria in «pure cultivation,» as it is technically called. Up to the time of Koch's classical research upon the methods of investigating bacteria, their study had been conducted in fluid materials; that is, in infusions of either vegetable or animal matters, in which most bacterial species develop with remarkable activity. Since many totally distinct species are indistinguishable from one another by their size, shape and general appearance, it was obviously impossible, by the older methods of study, either to be certain if one were dealing with one or more species in the fluids in which they were growing, or to separate the one from the other in case of confusion. Koch appreciated this defect and suggested the use of solid materials as culture media, hoping thereby to reproduce the conditions so often seen when such organic matters as bread, potato, cheese, etc., become moldy on exposure to air. Here one sees the mold not always as an inextricable mixture of different species, but often as sharply isolated islands of beginning growth — as mold colonies — so to speak. These, on examination, are usually found to consist of single species, and on a slice of moistened bread one may often observe several colonies of distinct species growing side by side without, for a time at least, encroaching one upon another. By appropriate methods it is easily possible to transplant such colonies, free from admixture with other forms, and study them as «pure cultures.» But such substances as bread, potato, etc., are not in general as well adapted to the study of bacteria as to that of molds. Appreciating this Koch demonstrated that the addition of gelatin to the infusions that had been employed for the successful cultivation of bacteria converted them into practically solid culture media without robbing them of any of their useful properties; and that by the appropriate employment of such solid media it was easily possible to separate as pure cultures the individual species composing the mixtures of bacteria that one desired to analyze. Thus, for example, if a tube of gelatinized beef tea, freed from all living bacteria by heat, be gently warmed until liquified, and be then inoculated with a mixture of several species of bacteria, growth at once begins and if left in the test-tube progresses in about the same manner as if the beef tea did not contain gelatin; but if while still warm and fluid the contents of the tube be poured out upon a flat, cold surface, the increased area causes the bacteria to become more widely separated from one another and the lower temperature results in the solidification of the gelatin, so that each bacterium is fixed in its new position. It at once begins to germinate, and presently a «colony» results; the surface ultimately becoming studded with such colonies. As the colonies from the different species differ from one another in many ways — in outline, texture, color, effect of their growth on the gelatin, etc. — it is easily possible, after a little practice, to distinguish them by the naked eye, and by transplanting them to tubes of sterile culture media to study them without the disturbing presence of other species; that is, in pure culture.

The introduction of this method for the isolation and study of bacterial species in pure cultivation certainly constitutes the most important stimulus to the development of modern

bacteriology. By it results were placed upon a more secure basis than ever before, and a confidence in the work such as had never existed was awakened in the minds of all students of the subject.

The studies that had been made by Pasteur upon fermentation; upon the souring of wines; upon the maladies of silk worms, and upon certain fatal epizootics of fowls and domestic cattle; together with Koch's fundamental studies upon the infections of wounds and the appropriate methods of analyzing them were rich in suggestion to the pioneers in this new field. Within a comparatively brief period after the adoption of the new methods our knowledge of the exciting causes of many hitherto obscure diseases was greatly extended; it was shown to be possible to determine the modes of their transmission and the channels through which infection occurred. The conditions most favorable to the successful action of a host of substances employed for the purpose of disinfection were accurately determined. And early in the work observations were made that indicated the possibility of successful vaccination against disease through the use of attenuated (weakened) living cultures of specific disease-producing bacteria. One of the most important outgrowths of modern bacteriology has resulted from its application to the problems of the sanitary engineer. As a result of these studies we know that sewage, polluted waters and polluted soils tend naturally to revert to a state of purity if their pollution be checked and that this progressive purification is due in large part to the activities of the bacteria located within them. It has been found that by the appropriate adjustment of conditions the normal activity of the bacteria may be so greatly accentuated as to constitute them the most important factors in the purification of polluted waters and sewage. The utilization of these facts is conspicuously illustrated in the purification of water by the process of natural sand filtration and in the purification of sewage by irrigation; by the septic tank process, etc. In these methods living bacteria and other living microscopic organisms, and they alone, are the instruments through which the results are attained. The sand grains in the filters and the particles of soil in the irrigation fields serve only as objects to which the micro-organisms can attach themselves and multiply. By the normal life processes of the bacteria the polluting organic matters in the fluids to be purified are used up and inert matters given off as a result.

In the study of agricultural phenomena from the bacteriological standpoint knowledge has been equally extended. At one time it was taught that atmospheric nitrogen — representing roughly 80 per cent of the air by volume — was of no direct biological significance. This view has in late years been entirely revised. We have learned that the leguminous plants when assisted, symbiotically, by certain soil bacteria, are enabled to make up their nitrogen deficit in large part from the free nitrogen of the air; a fact that sheds important light upon the significance of plants of this type in the practice of "rotation of crops." Under normal conditions instead of impoverishing the soil, the legumens — clover, peas, beans, etc.— with the aid of the bacteria attached to their roots, may actually enrich it. The application of bacteriological methods to the study of dairy processes has revealed the interesting fact that the delicate flavors to which butters and cheeses owe their commercial value are directly due to the products of growth of certain species or groups of species of bacteria and more highly organized molds. A number of such species have been isolated and are kept in pure cultivation — so that by purposely inoculating the fresh cream with them butter of uniform flavor may with comparative ease be produced.

Probably the most important results of applied bacteriology are those in connection with preventive medicine. Early in the course of the work it was discovered by Pasteur that certain virulent pathogenic bacteria when kept under particular conditions gradually lost their disease-producing power, wholly or in part, without their other life properties being conspicuously disturbed. If injected into animals when in this attenuated state the result was a mild, temporary and modified form of infection usually followed by recovery. With recovery the animals so treated were immune from the activities of the fully virulent bacteria of the same species; in other words, they had been protected from the fatal injection by vaccination with an attenuated species. The subsequent developments growing out of this observation have resulted in the annual saving of millions of money through the successful vaccination of sheep, horses and bovines against the fatal infection known as splenic fever or anthrax, and, though less successful, of other domestic animals against other infections also. In the closer analysis of the means by which infective bacteria cause disease it soon became evident that it is through the elaboration of specific poisons; sometimes easily separated from the bacteria, at others so intimately associated with the bacterial tissues as to make their separation difficult or impossible. The question arose as to the effect of the poisons, separated from the living bacteria, upon the animals susceptible to infection by the bacteria themselves, and it was found that fatal intoxications often accompanied by the same constitutional symptoms and pathological lesions followed the use of the poisons, just as they would follow inoculations by the bacteria by which they were produced. In pursuance of this topic it was discovered that if very small, only mildly intoxicating, doses of these specific poisons of bacterial origin were repeatedly injected into susceptible animals, after a while the latter acquired not only a sort of tolerance to them, but a tolerance that was accompanied by the presence in the circulating blood of an antidote for these poisons — an "antitoxin," as it is called. This reaction has been shown to be possible for a number of specific infections, and in the case of diphtheria has met with such practical success as to be deservedly regarded as the triumph of modern medicine.

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**BACTERIOLYTIC,** an agent capable of destroying bacteria and usually applied to some product of the human body or of an animal body, notably blood serum, which when injected into an animal is capable of destroying some form of micro-organism in that animal. The production of specific bacteriolytic sera is one of the great advances in modern medicine and its extension promises much hope for the future treatment of many of the bacterial diseases. Bacteriolytic sera have been made for a number of micro-organisms. See IMMUNITY.

**BACTERIUM,** a genus of bacteria of the family *Bacillariaceæ,* characterized by rod-shaped forms and absence of flagella. They are thus non-motile. A large number of pathogenic bacteria belong to this genus. See BACTERIA; BACILLUS.

**BACTRIAN CAMEL.** See CAMEL.

**BACTRIANA,** bak-trī-ā'na, or **BACTRIA,** a country of the ancient Persian empire, lying north of the Hindu Kush Mountains on the upper Oxus. It corresponded almost with the modern Balkh in Afghanistan. Here many scholars locate the original home of the Aryan or Indo-European family of nations. Its capital, Bactra, or Zariaspa, was also the cradle of the Zoroastrian religion. Originally a powerful kingdom, it maintained its independence until its subjugation by Cyrus about 540 B.C., when it became a satrapy of the Persian empire. It was included in the conquests of Alexander and formed a part of the kingdom of the Seleucidæ until the foundation, about 256 B.C., by Diodotus, of the Greek kingdom of Bactria, which extended to the Indus and which, after a long struggle, was overthrown by the Parthians. Numerous coins with Greek legends have been found in the *topes* or burial places to the northeast of Kabul.

**BACTRIS,** a genus of American palms, numbering more than 50 species. The genus is of commercial importance, a tough thread used for net weaving being made from the fibres of *Bactris acanthocarpa,* and walking-sticks are manufactured from the long, slender stems of *Bactris maraja.* The fruit of the latter is considered a delicacy.

**BACTRITES,** bāk-trī'tēz, a genus of fossil ammonites, with a straight shell and indented, but not ramified, septa. The genus ranges from the lower Silurian to the Devonian.

**BACTRUS,** the ancient name of a river in the khanat of Balkh, Afghan Turkestan, upon which Bactria was situated.

**BACULITES,** bāk'ū-lī'tēz, a genus of fossil ammonites, characteristic of chalk formations, having a straight, tapering shell.

**BACUP,** bāk'ŭp, England, town of Lancashire, 18 miles north from Manchester. There are a number of churches, chapels and schools, a mechanics' institute, courthouse, market-hall, large co-operative stores, etc. The chief manufacturing establishments are connected with cotton spinning and power-loom weaving; there are also iron and brass foundries and machine-shops, dye-works, etc., and in the neighborhood coal-pits and vast stone quarries. Its charter of incorporation was granted in 1882 and since that time great improvements have been made in its condition and appearance. It has a sewage farm for the utilization of town refuse. Pop. about 22,500.

**BAD LANDS,** a name applied to portions of the arid regions of the west, which present wide areas of hills and ridges of moderate height, bare of sod and intricately broken by numerous gullies and ravines. The principal areas are in the western Dakotas and central Wyoming and smaller examples of bad-land topography are of frequent occurrence in the arid regions in various portions of the world. In the Big Bad Lands of western South Dakota, east of the Black Hills, there is an area of about 2,000 square miles which consists largely of bad lands occupying extensive basins cut in a plateau along the White and Cheyenne rivers. They present wonderfully weird scenery, but are rarely visited by the average sightseer. An extensive area in the valley of the Little Missouri River is crossed by the Northern Pacific Railroad in the vicinity of Medora and many bad-land features are visible near the railroad. Typical bad lands present ridges and mesas from 200 to 400 feet high in greater part, eroded into fantastic shapes and cut by ravines and gullies into an endless variety of rugged buttresses and pinnacles. The materials are mainly light-colored, sandy clays and soft sandstones in nearly horizontal strata and their bare slopes are dazzling in the bright sunlight. Most bad land regions were table-lands originally and areas of the old surface remain in level-topped, grass-covered mesas of various sizes, with bad land slopes extending to flat-bottomed valleys of greater or less width. Bad lands exhibit clearly the close relations of topographic form to rock texture, the homogeneous clays being carved into regular slopes in which sandstone layers give rise to benches or protect columns and pinnacles of clay. Bad lands are developed in soft rocks where a region has been so uplifted that there is rapid erosion, under arid or semi-arid climatic conditions. The occasional rains cut gullies which eventually are deepened into ravines and, as the rocks are soft, the erosion progresses more rapidly than vegetation can establish itself. In regions of abundant rainfall, vegetation is so vigorous that it usually forms a protective mantle on all but the steeper slopes, but in arid lands a thin sod is the principal growth and it is quickly removed by the rapid run-off of the torrential rains. The Big Bad Lands of South Dakota have yielded

large numbers of fossil animals of late Eocene age, which have made the region famous as a collecting ground.

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**BADAGRI,** bä'dą-grē, or **BADAGRY,** a seaport of southern Nigeria, British West Africa. Early in its history it was a noted slave mart, contained important manufactories, and had a population of 10,000. It was from this place that, in 1825, Clapperton and Lander started to explore the African interior.

**BADAJOZ,** bä'dä-hōth', the capital of the Spanish province of Badajoz, on the left bank of the Guadiana, which is crossed by a granite bridge of 28 arches. It is a bishop's see and has an interesting cathedral begun in the middle of the 13th century, its choir richly and finely carved in the Renaissance style. The city, which is only five miles from the Portuguese boundary, is a place of great strength, as befits its stormy history, and with its walls, bastions and forts, presents a noble front. Alfonso IX took it from the Moors in 1235 and it was besieged by the Portuguese in 1660 and 1705. During the Peninsular War Badajoz was besieged by Marshal Soult and taken by him in March 1911 as the result of treachery. British forces twice unsuccessfully attempted its recapture on 5 and 29 May 1811; it was besieged by Wellington on 16 March and taken 6 April 1812. An abortive revolutionary rising took place here in 1812. Badajoz was the birthplace of Morales the painter. Pop. (1910) 35,039.

**BADAKHSHAN,** bä'dąkh-shän', a province of Afghanistan. It has the Oxus on the north and the Hindu Kush on the south; and has lofty mountains and fertile valleys; the chief town is Faizabad. There are lapis lazuli and ruby mines. The inhabitants — Tajiks and Turks — profess Mohammedanism. Pop. 100,000.

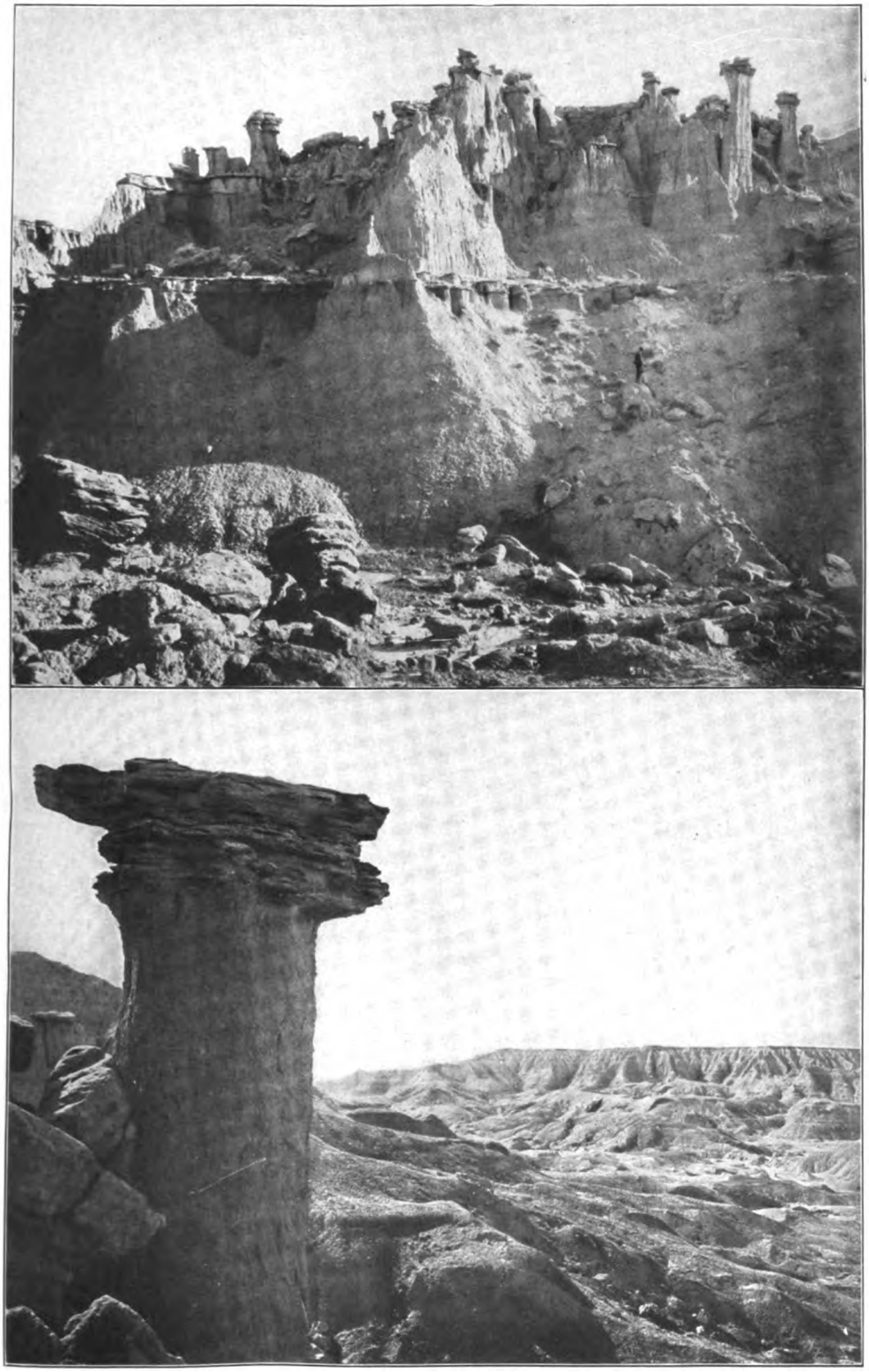
**BADALONA,** bä'dą-lō'ną, Spain, seaport on the Mediterranean, five miles from Barcelona. It is situated in a fertile region which produces grain, oranges and a great variety of vegetables. The town has experienced rapid industrial growth and manufactures wine. There are, besides, shipyards, sugar and petroleum refineries and glass works, the latter the largest in Spain. A considerable coastwise trade is carried on. Pop. (1910) 20,957.

**BADDECK',** a fishing village and summer resort on Cape Breton Island.

**BADDERLOCKS** (*alaria esculenta*), an olive-colored sea weed which grows on rocks in deep water on the shores of Europe and Iceland. It has a short cylindrical stem with lateral spore-bearing process and a membranous olive-green frond of 2 to 12 feet long, with a stout midrib. This midrib, together with the fruits, is eaten by the inhabitants of the sea coasts of Iceland, Denmark, Scotland, Ireland, etc., and is said to be the best of the esculent algæ "when eaten raw." The name is supposed to be a corruption of balder-locks.

**BADEAU,** bą-dō', **Adam,** American military officer: b. New York, 29 Dec. 1831; d. 19 March 1895; was educated at private schools. He served with gallantry in the Union army during the Civil War; was on the staff of General Sherman in 1862–63 and secretary to General Grant in 1864–69; and in the latter year was retired with the rank of captain in the regular army and of brevet brigadier-general of volunteers and was appointed secretary of legation in London. He was consul-general in London, 1870–81, and during this period was given leave of absence to accompany General Grant on his tour around the world (1877–78). In 1882–84 he was consul-general in Havana. After the death of General Grant he brought suit against his heirs for payment of services rendered in the preparation of General Grant's 'Memoirs,' which was satisfactorily settled out of court. His publications include 'The Vagabond' (New York 1889); 'Military History of Ulysses S. Grant' (3 vols., 1867–81); 'Conspiracy; A Cuban Romance' (1885); 'Aristocracy in England' (1886); and 'Grant in Peace' (1886).

**BADEN,** bä'dĕn, a grand duchy in the German empire. The Rhine separates it from Alsace on the east and Würtemberg bounds it on the west. It has an area of 5,823 square miles, with a population of 2,142,833 in 1910. The country is mountainous, being traversed by the lofty plateau of the Schwarzwald, or Black Forest, which attains its highest point in the Feldberg (4,904 feet). The nucleus of this plateau consists of gneiss and granite. In the north it sinks down toward the Odenwald, which is, however, of different geological structure, being composed for the most part of red sandstone. The whole of Baden, except a small portion in the southeast, in which the Danube takes its rise, belongs to the basin of the Rhine, which bounds it on the south and west. Numerous tributaries of the Rhine intersect it, the chief being the Neckar. Lakes are numerous and include a considerable part of the lake of Constance. The climate varies much. The hilly parts, especially in the east, are cold and have a long winter, while the valley of the Rhine enjoys the finest climate of Germany. The principal minerals worked are coal, salt, iron, zinc and nickel. The number of mineral springs is remarkably great and of these not a few are of great celebrity. The vegetation is peculiarly rich and there are magnificent forests. The cereals comprise wheat, oats, barley and rye. Potatoes, hemp, tobacco, wine and sugar beet are largely produced. Several of the wines, both white and red, rank in the first class. Baden has long been famous for its fruits also. Of the total area, 42 per cent is under cultivation, 37 per cent under forest and 17 per cent under meadows and pastures. The farms are mostly quite small. The manufactures are important. Among them are textiles, tobacco and cigars, chemicals, machinery, pottery ware, jewelry (especially at Pforzheim), wooden clocks, confined chiefly to the districts of the Black Forest, musical boxes and other musical toys. The mineral production is comparatively unimportant; the chief products are salt and building stone. The capital is Karlsruhe (pop. 135,000), about five miles from the Rhine; the other chief towns are Mannheim, Freiburg-im-Breisgau, with a Roman Catholic university, Baden and Heidelberg. Heidelberg has a university (Protestant), founded in 1386, the oldest in the present German empire. The railways have a length of 1,450 miles and are nearly all state property.



Typical views in Big Badlands of South Dakota, showing pinnacles of hard clay capped by sandstone, the sodless slopes, and in the distance a remnant of the original plateau out of which the Badlands are eroded

In the time of the Roman empire, southern Baden belonged to the Roman province of Rhætia. Under the old German empire it was a margravate, which in 1533 was divided into Baden-Baden and Baden-Durlach, but reunited in 1771. The title of grand duke was conferred by Napoleon in 1806 and in the same year Baden was extended to its present limits. The Constitution dates from 22 Aug. 1818 and was modified in 1904. Baden entered the North German Confederation for the founding of the German empire by treaty of 15 Nov. 1870. The executive power is vested in the grand duke, the legislative in a house of legislature, consisting of an upper and a lower chamber. The former consists partly of hereditary members, eight members elected for eight years by the landed nobility, the archbishop of Freiburg and the Protestant prelate and two representatives of state universities; the latter consists of elected representatives of the people. The revenue is mainly derived from taxes on land and incomes and the produce of crown-lands, forests and mines. The revenue in 1912 was 105,146,683 marks. Baden sends three members to the German Bundesrath, or Federal Council, and 14 deputies to the Reichstag. Two-thirds of the population are Roman Catholics, the rest Protestants.

**BADEN,** Switzerland, town in the canton of Aargau. The town (OBER-BADEN, or BADEN-IM-AARGAU) is 12 miles northeast of Aarau, on the left bank of the Limmat. It has a town-hall, a handsome Roman Catholic church, a convent, monastery, hospital, etc., and is celebrated for hot sulphurous baths, employed in treatment of gout, rheumatism and cutaneous diseases. The hottest springs have a temperature of 116° F. The Romans were well acquainted with the baths here; and between the 15th and 18th centuries they were the most celebrated in Europe. Pop. about 8,500.

**BADEN-BADEN** (anciently, CIVITAS AURELIA AQUENSIS), Germany, town and watering-place in the grand duchy of Baden, 18 miles south-southwest of Karlsruhe. The older part of the town is built on a spur of the Black Forest, overhanging the valley of the little stream Oosbach. The houses here are in general old and high; the streets mostly narrow and crooked and nearly all steep. The new and larger portion of the town lies below and is rich in fine hotels, elegant villas and handsome private dwellings. The edifices most deserving of notice are the New Palace, standing on an isolated height above the town and surrounded by fine gardens; the town or parish church, containing the tombs of 14 margraves of Baden; the Protestant church, the English church and the new town-hall. Baden has been celebrated from remote antiquity for its thermal baths, which made it a favorite resort of the Romans. The season lasts from 1 May to 31 October and 70,000 visitors arrive annually. Pop. (1910) 22,066.

**BADEN-BEI-WIEN,** bä'dĕn-bī-vēn, Austria, a watering place about 15 miles south-southwest of Vienna. It was the Aquæ Pannoniæ, or Cethiæ of the Romans and is still famous for its warm mineral springs, which are frequented during the season by from 12,000 to 15,000 persons, chiefly from the Austrian capital. The town has the usual accessories of a fashionable watering resort — large bathing establishments, kursaal, trinkhalle, summer theatre, etc. In the neighborhood are numerous villas belonging to the Austrian nobility and some interesting ruins. It became a city in 1840. About four miles from Baden is Meierling, a royal hunting lodge (now a convent), where Crown Prince Rudolph of Austria met his tragic death in 1889. The season is from July to September. Pop. (1910) 19,073.

**BADEN-POWELL,** bä'dĕn-pow"l, **Sir George Smyth,** English politician and political writer: b. Oxford, 24 Dec. 1847; d. 20 Nov. 1898. He was official inquirer for the British government on several important questions, notably on the Bering Sea dispute; was a member of the joint commission in Washington in 1892 and advised in the conduct and preparation of the case before the Bering Sea arbitration tribunal. He was author of 'New Homes for the Old Country' (1872), a storehouse of information about Australia; 'Protection and Bad Times' (1879); 'State Aid and State Interference' (1882); 'The Truth About Home Rule' (1888); 'The Land Systems of India' (1892); etc. He was a member of Parliament for Liverpool from 1885 till his death.

**BADEN-POWELL, Sir Robert Stephenson Smyth,** British military officer: b. London, 22 Feb. 1857; was educated at the Charterhouse School; joined the 13th Hussars in 1876; was adjutant in India, Afghanistan and south Africa; assistant military secretary on the staff in South Africa in 1887–89; took part in the operations in Zululand, for which he was highly commended, in 1888; assistant military secretary in Malta in 1890–93; on special service in Ashanti, commanding the native levies, 1895, for which he was brevetted lieutenant-colonel; chief staff officer in the Matabeleland campaign, for which he was brevetted colonel and became lieutenant-colonel, commanding the 5th Dragoon Guards in 1897. In the war in South Africa in 1899–1900, he signally distinguished himself by his grand defense of Mafeking, Cape Province, holding the town with a small force against repeated attacks, under an almost continuous bombardment, from 15 Oct. 1899 until relieved on 16 May 1900. In recognition of this heroic defense the Queen promoted Baden-Powell to be a major-general. He founded the Boy Scouts organization in 1908. His literary works include 'Reconnaissance and Scouting' (1890); 'Cavalry Instruction' (1895); 'The Downfall of Prempeh' (1896); 'The Matebele Campaign' (1896); 'Scouting for Boys' (1908); 'My Adventures as a Spy' (1915); 'Indian Reminiscences' (1915).

**BADENI,** bä'dĕn-ē, **Casimir Felix,** COUNT, Austrian statesman: b. Poland, 14 Oct. 1846; d. Vienna, 9 July 1909. His father, though poor, was a man of intellect and was made a count by the King of Poland just before the birth of Casimir. He also fell heir to a fortune and his two sons received a university education. Casimir entered the Austrian civil service; became district chief at Zolkiew in 1871; Minister of the Interior in 1873; governor of Galicia in 1888; and Prime Minister of

Austria-Hungary, 15 Sept. 1895. In April 1897, because of inability to maintain a Liberal majority in the newly-elected Reichsrath, he resigned with his cabinet, but the Emperor declined to accept his resignation and he remained in office until 28 November, when he again resigned and a new cabinet was organized. The principal feature of his administration and the one which not only led to his retirement from politics but to a long period of political agitation was his introduction of what is known as the "language ordinance," which allowed the official use of the Czech language in Bohemia and Moravia. This measure alienated the Germans and provoked a racial conflict of a most bitter character between them and the Czechs.

**BADENWEILER,** bä'dĕn-vī-lĕr, Germany, watering place in the grand duchy of Baden, near Mülheim. Its mineral springs are now rated among the indifferent waters and it is of interest chiefly for the ruins of Roman baths that were discovered in 1847. The foundation of the town is referred to the time of Hadrian and the remains of the vapor baths, of which there are excellent specimens, are supposed to be of the same period. The ruins show a division for men and for women, each having a large outer court opening into a dressing-room; there is the hot-air bath, the warm bath and the cold bath. The walls and steps are in their original position. The whole structure is 318 feet by 90 feet. There are beautiful promenades and numerous villas in the vicinity and the town contains a grand-ducal palace dating from the 16th century.

**BADGE,** a distinctive device, emblem, mark, honorary decoration or special cognizance used originally to identify a knight or distinguish his followers, now worn as a sign of office or licensed employment, as a token of membership in some society or generally as a mark showing the relation of the wearer to any person, occupation or order.

**BADGER, George Edmund,** American statesman: b. Newbern, N. C., 13 April 1795; d. 13 April 1866; was graduated at Yale College in 1813; became a lawyer at Raleigh; and was judge of the North Carolina Superior Court in 1820–25. He was appointed Secretary of the Navy 14 March 1841, resigning after the death of President Harrison, and was elected to the United States Senate in 1846 and 1848. In 1853 he was nominated for justice of the United States Supreme Court, but was not confirmed. He served in the State convention called to pass on the question of secession, although opposed to such measure, and after making a strong speech in defense of the Union, was afterward known as a member of the Conservative party.

**BADGER, Joseph,** American clergyman, one of the earliest missionaries to the country northwest of the Ohio River: b. Wilbraham, Mass., 28 Feb. 1757; d. 5 May 1846. He received his early instruction chiefly from his parents and at the age of 18 joined the Revolutionary army. He remained in service for four years, then determined to obtain an education and engage in the Christian ministry. Entered Yale College in 1781, where he maintained himself and his scholarship by alternately studying and teaching. He remained a few years in Connecticut, then in 1800 was selected by the missionary society of that State to visit the unsettled parts of Ohio. His work took him from settlement to settlement, often more than a day's journey apart, through a country where there were no roads and across rivers without bridges. During the War of 1812 he was appointed by General Harrison chaplain to the army in that district and his knowledge of the country was of great service to that commander-in-chief; but he resumed his missionary functions at the close of the war and continued them till 1835, when he retired and lived with his only daughter. During the latter years of his life he received a pension from the United States government.

**BADGER, Oscar L.,** American naval officer: b. Windham, Conn., 12 Aug. 1823; d. 20 June 1899; entered the United States navy 9 Sept. 1841; became lieutenant-commander 16 July 1862; commander 25 July 1866; captain 25 Nov. 1872; commodore 15 Nov. 1881; and was retired 12 Aug. 1885. He served on the steamer *Mississippi* during the Mexican War, taking part in the attack on Alvarado, 1846; led the party that attacked and destroyed the village of Vutia, Fiji Islands, while on the sloop *John Adams,* 1855–56; and in the Civil War commanded the *Anacostia* of the Potomac flotilla, 1861–62 and the ironclads *Patapsco* and *Montauk,* in the operations in Charleston harbor in 1863; and while acting fleet captain on the flagship *Weehawken* was severely wounded during the attack on Fort Sumter, 1 Sept. 1863.

**BADGER,** a stout, burrowing, carnivorous mammal of the fur-bearing sub-family *Melinæ* in the family *Mustelidæ,* related to the skunks and weasels, species of which inhabit various parts of the northern hemisphere. Badgers have short legs, elongated feet with powerful toes adapted to digging, heavy jaws with big teeth and great strength, courage and cunning. They wear coats of thick fur usually grizzled in brown and gray, the face is striped and the paws are blackish. The fur is of considerable value and the hairs are used in artists' brushes. The American badger (*Taxidea americana*) was formerly distributed all over the western part of the United States from the prairie districts of Ohio and Wisconsin to the Pacific coast, but has been exterminated by civilization east of the dry plains, where it is still numerous although not often seen, because it rarely comes abroad except in the night. It dwells in deep burrows which it digs for itself and feeds upon gophers, ground-squirrels, such ground-building birds and their eggs and young as it is able to catch and, in times of scarcity, upon small reptiles and insects. Badgers abound in the vicinity of prairie-dog towns, whose underground homes they can enter or dig out without difficulty. This species is found as far north as Hudson Bay and south to central Mexico, where the local variety is called "tejon." When by rare chance a badger is surprised during the day too far away from his hole to escape into it before being observed, he squats down, withdrawing nose and feet beneath his body, and remains absolutely still, when his grizzled back looks so much like a mere hillock of earth that he is likely to escape being seen altogether. The ex-

traordinary breadth and fatness of his form is one of his strongest characteristics. During the coldest part of the winter he retires to his den and passes the time when no food is to be had in deep sleep. The best account of this animal is to be found in Dr. Coues' 'Furbearing Animals' (Washington 1877). Consult also Ingersoll, Ernest, 'Wild Neighbors' (New York 1897) and Seton, 'Life Histories of Northern Animals' (New York 1909). The European badger (*Meles taxus*) is very similar in general appearance but differs in anatomical details. Its general habits and food are like those of the American badger except that in the absence of open plains it dwells in wooded regions and has a fondness for honey, digging it out of the nests of bumblebees and others which make their homes in the ground. This is the animal formerly used in the cruel sport of badger-baiting. A captive badger was placed in an overturned barrel or some similar place, and dogs were set upon it for the amusement of seeing the fighting that resulted. It required a powerful and active dog to oyercome the little animal. Frequently, however, the badger was given no fair chance, but was compelled to face in the open two or three dogs. From this unmanly sport is derived the verb "to badger." Many references are to be found in early English literature to this amusement, and to the animal itself under the old terms "grey" and "brock," the latter still in common use in northern England and Scotland (*Celt.* broc, badger). Various closely related species and varieties of the badger are to be found in northern Asia, and other relatives exist in India, Malay Islands and Africa. For these see SAND-BADGER; HONEY BADGER; RATEL; TELEDU. Consult Johnston, 'British Mammals' (London 1903).

**BADGER STATE,** a nickname given to the State of Wisconsin.

**BADGHIS,** bäd-gēz', a region north of Herat, comprising the country between the Murghab and the Harirud rivers, as far north as the edge of the desert. It lies just to the south of the boundary line between Afghanistan and the Russian territories, as defined in 1887.

**BADGLEY, Sidney Rose,** Canadian architect: b. near Kingston, Ontario, 28 May 1850. He studied architecture in Toronto, and, after practising some time in Saint Catharines, established himself in Cleveland, Ohio. He has made a specialty of the architecture of churches and public buildings, and has planned and erected churches in almost all parts of Canada and the United States, and, among other structures, the Massey Hall, Toronto; the Slocum Library and Perkins Observatory, in Ohio; Wesleyan University, in Delaware; and the Medical College, Cleveland. He published an 'Architectural Souvenir' (1896).

**BADHAM, Charles,** English educator: b. Ludlow, 18 July 1813; d. 26 Feb. 1884; was considered one of the most eminent classical scholars of his day; and after serving for several years as headmaster of King Edward VI's Grammar School at Louth, he became professor of classics and logic in the University of Sydney, Australia, 1867. While in Sydney he established a system of teaching by correspondence, similar to the present university extension scheme. He published a number of works on Greek classics, and 'Criticism Applied to Shakespeare' (1846).

**BADIA Y LEBLICH,** bą-dē'ą ę lā-blēch', **Domingo,** Spanish traveler: b. 1766; d. 1818; he visited in 1803 and the four following years the Mohammedan countries bordering on the Mediterranean. During the whole of his tour he professed to be a Mussulman, and traveled under the denomination of "Ali Bey el Abbassi." He was so skilful in carrying out his part that he deceived Moslem rulers and scholars, and was at one time in great favor in the court of Morocco. It is now admitted that he was employed as a political agent by the Spanish government at the instigation of Napoleon. His peculiar situation and religious profession gave him opportunities for making many observations which could not occur to other travelers, and he published an account of his travels, with the title 'Voyages d'Ali Bei en Afrique et en Asie pendant les années 1803–07.'

**BADINGUET,** bą'dăn-gā', afterward RADOT, a Moor, as whom Napoleon III masqueraded to escape from the fortress of Ham in 1846; afterward a nickname for Napoleon III. He died in 1883.

**BADIUS,** bā'de-ŭs, French printer and writer: b. 1462; d. 1535. About 1500 he founded his printing establishment at Paris, and published a number of the classics. He annotated these himself and wrote also a life of 'Thomas à Kempis.'

**BADLAM, Stephen,** American military officer: b. Milton, Mass., 25 March 1748; d. 24 Aug. 1815; entered the Revolutionary army in 1775; became commander of the artillery in the department of Canada. On the announcement of the adoption of the Declaration of Independence, he took possession of the heights opposite Ticonderoga and named the place Mount Independence. Subsequently he rendered good service at Fort Stanwix, and in 1799 was made brigadier-general.

**BADMAN, The Life and Death of Mr.,** an allegory by John Bunyan, published in 1680. It gives a vivid picture of the life of the common people during the time of Charles II.

**BADMINTON.** The game now called Badminton is in reality a modification of the very ancient game of battledore and shuttlecock; but it is played on a court 44 feet long by 20 wide over a net strung across the centre not less than 18 inches deep, with its lower edge five feet from the ground. The bat is strong, like a racquet bat, and weighs about five ounces. The shuttlecock is feathered after the old fashion and weighs from 73 to 85 grains. The service line is drawn six and one-half feet from the net on either side. A line drawn down the centre, joining the service and base lines, forms two courts at each end. The game can be played by two or four, six or eight players. Each striker scores, or is penalized, according to the result of the rules.

**BADOC,** bą-dōk', Philippine Islands, a town of the province of Ilicos Norte, on the island of Luzon. It is situated near the coast, about 22 miles south of Laoag. Pop. 12,564.

**BADOGLIO, Pietro,** Italian soldier: b. Piedmont 1871. A skilled artillery officer, he served in the Tripolitan campaign and in the

European War distinguished himself on various occasions by his resourcefulness at critical moments on the battlefield. The Italian reverses in the great Austro-German drive during October and November 1917 led to a redistribution of commands in the Italian army. General Cadorna was replaced by Gen. Armando Diaz, to whose staff General Badoglio and General Giardina were attached.

**BADOURA,** bą-doo'rą, the daughter of the King of China, who falls in love with the sleeping prince in the story of Prince Camaralzaman, in the 'Arabian Nights' Entertainment.'

**BADRINATH,** bä'drĭ-näth', a peak of the main Himalayan Range, in Garhwal district of the United Provinces, India; 23,210 feet above the sea. On one of its shoulders, at an elevation of 10,400 feet, stands a celebrated temple of Vishnu, which some years attracts as many as 50,000 pilgrims.

**BADRULBADUR, Princess,** bą-drool'ba-door', the wife of Aladdin, in the 'Arabian Nights' Entertainment,' story of Aladdin and the lamp.

**BÆBIA GENS,** bē'bĭ-ą jĕnz, a plebeian clan of ancient Rome. The first member of the family to obtain the consulship was Cn. Bæbius Tamphilus (182 B.C.). The other distinguished ones are known under their family names, Dives, Herennius, Sulca, etc.

**BAEDEKER,** bād'ĕ-kĕr, **Karl,** German publisher: b. 1801; d. 1859. His father established a printing and bookselling business in Essen in 1797. Karl set up in Coblentz in 1827. With Murray's handbooks as a model, he began the issue of guidebooks, the first being one on the Rhine, followed in 1839 by works on Holland and Belgium. The firm removed to Leipzig in 1872: in 1861 translations of the series began to appear in English, and they are also published in French. The name Baedeker is now a synonym for guidebooks.

**BAEKELAND,** bā'ke-länd, **Leo Hendrik,** Belgian-American chemist: b. Ghent, 14 Nov. 1863. He was educated at the University of Ghent, where he was graduated in 1882. Later he studied electro-chemistry at the Polytechnicum, Charlottenburg, Germany. He taught for several years at the University of Ghent and at the Normal School of Science of Bruges. He came to the United States in 1889 and in 1893 founded the Nepera Chemical Company for the manufacture of photographic papers of his invention, including the well-known Velox paper. In 1899 he disposed of his holdings to the Eastman Company and has since engaged in research engineering. His best known invention is bakelite, a chemical synthesis from carbolic acid and formaldehyde, and used as a substitute for hard rubber and amber. He has patented in the United States and abroad many inventions on the subjects of organic chemistry, electric insulation, synthetic resins, plastics, lacquers and varnishes, etc. He was awarded the Nichols medal in 1909, and the Willard Gibbs medal in 1913 by the American Chemical Society. In 1910 he was awarded the John Scott medal of the Franklin Institute, in 1914 the Chandler medal, Columbia University and in 1916 the Perkin medal for industrial chemical research. He was president of the American Electro-chemical Society in 1909 and of the American Institute of Chemical Engineers in 1912. He contributes to numerous publications on professional topics.

**BAELE,** bä-ā'lĕ, an African tribe dwelling northeast of Lake Tchad. It is nomadic, half-heathen and half-Mohammedan, and owns large herds of cattle, camels, goats and sheep.

**BAENA,** bä-ā'nä, **Antonio,** Portuguese-Brazilian historian and geographer: b. Portugal about 1795; d. 28 March 1850; was an officer in the Portuguese, afterward in the Brazilian, army. He studied the geography and history of the Amazon Valley. His principal works were 'The Ages of Pará' (1838), a historic compend stopping in 1823, and 'Chorographic Essay on the Province of Pará' (1839), a geographical and statistical work, giving the details of explorations made by himself. These are still standard authorities on that region.

**BAENA,** bä-ā'ną, Spain, town in province of Andalusia, 32 miles southeast from Cordova, on the Marbella. It has manufactures of textiles, soap and flour, and horse-breeding is of importance. Large quantities of grain, oil, esparto, fruit and wine are exported. There are a number of interesting Roman remains. Pop. (1910) 14,730.

**BAER,** bār, **George Frederick,** American lawyer and capitalist: b. Somerset County, Pa., 26 Sept. 1842; d. 26 April 1914. He was educated at Franklin and Marshall College, served throughout the Civil War, and was admitted to the bar in 1864, becoming soon after the confidential legal adviser to J. Pierpont Morgan. He was counsel, and director and president, successively, of the Philadelphia and Reading Railroad Company after 1870, and reorganized the company in 1893. He became president of the Philadelphia and Reading Coal and Iron Company, and of the Central Railroad of New Jersey. He led the operators in the anthracite coal strike of 1902. Because of his attitude at this time he aroused great animosity among American labor leaders and many social reformers. He was often referred to as "Divine Right" Baer because of his statement that "The rights and interests of the laboring man will be protected and cared for — not by the labor agitators, but by the Christian men to whom God in His infinite wisdom has given the control of the property interests of the country."

**BAER, Karl Ernst von,** Russian naturalist: b. Piep, Esthonia, 29 Feb. 1792; d. 28 Nov. 1876; was professor of zoology at Königsberg (1819), and librarian of the Academy of Sciences at Saint Petersburg (1834). His principal works were 'History of the Evolution of Animals' (2 vols., 1828-37), and 'Researches into the Development of Fishes' (1835). He is one of the founders of the modern science of embryology, and his writings are distinguished for their philosophical teachings.

**BAER, William Jacob,** American artist: b. Cincinnati, Ohio, 29 Jan. 1860. He was a student of the Munich Royal Academy, 1885–92,

receiving four medals, while one of his works was purchased by the directors of the Academy. He was awarded 1st class medal for miniatures, New York, 1897; 1st class medal Paris Exposition, 1900; 1st class medal, Buffalo Exposition, 1901; Charleston Exposition, 1902. He was made president American Society Miniature Painters; A.N.A. (1913), and received a gold medal at the Panama Pacific Exposition, 1915. Among the most admired of his pictures are 'Aurora'; 'Summer'; 'Daphne'; and 'Primavera.'

**BAERT** or **BART, Jean,** French sailor: b. Dunkirk 1650; d. 1702. He raised himself, under Louis XIV, to the rank of commodore, and made the French navy what it was, at that time. The Dutch, English and Spanish called him the "French Devil." Bart brought into port a number of Dutch and English vessels, burned others, landed at Newcastle and laid waste the neighboring country. In 1694, when there was a scarcity of corn in France, he succeeded several times, notwithstanding the watchfulness of the English, in bringing into the harbor of Dunkirk ships loaded with this article. Once he delivered a number of such vessels, in the boldest manner, from the Dutch, into whose hands they had fallen, and received, in consequence, letters of nobility. In 1695 he was taken prisoner by the English and brought to Plymouth, but managed to make his escape. In 1696 he met the Dutch fleet from the Baltic and captured the escort with 40 ships; but on his return to Dunkirk 13 Dutch ships of the line appeared, and to avoid a very unequal combat he was obliged to burn the greater part of his captures. From the Peace of Ryswick to the breaking out of the war of the Spanish succession he lived at Dunkirk. There is always a warship in the French navy bearing the name *Jean Bart.*

**BAETHGEN,** bĕt'gĕn, **Friedrich,** German theologian: b. Lachem 1849; d. 1905. He was educated at Gŏttingen, Kiel and Berlin, and held professorships at Kiel, Halle and Greifswald. In 1895 he was called to the chair of Old Testament exegesis and Semitic languages at the University of Berlin. He published 'Untersuchungen über die Psalmen der Peschita' (1878); 'Evangelienfragmente' (1885); 'Die Psalmen übersetzt und erklärt' (1892).

**BÆTICA,** bē'tĭ-ka, the central division of ancient Spain under Roman rule, famed for its fertility, its mines of iron, gold and silver, and its delightful climate. These advantages gave rise to a number of fabulous stories, which made it the home of Geryon, an assailant of Hercules, and placed there the Elysian Fields. It passed into the hands of the Vandals, and was the first province conquered by the Moors.

**BAEYER,** bī'ẹr, **Adolph von,** a pioneer of German chemistry: b. Berlin, 31 Oct. 1835; d. Munich, 24 Aug. 1917. A pupil of Bunsen at Heidelberg, he spent some years in Berlin as a private tutor, where he came under the influence of A. W. von Hoffmann, whose pupil, Sir W. H. Perkin, discovered mauve, the first aniline dye. In 1872 Baeyer was appointed professor of chemistry and director of the new chemical laboratories in Strassburg, where many famous chemists studied, such as Emil Fischer, C. Graebe and C. Liebermann — the discoverers of synthetic madder (or alizarine), which effectually killed the French madder industry. In 1875 he succeeded to Liebig's chair in Munich, where he built the new Chemisches Institut, in which two generations of organic chemists of all nationalities have received their training. Baeyer was one of the fathers of modern organic chemistry, much of which rests on the foundations laid by himself and the many distinguished chemists trained under his guidance. In the technical world he helped in a marked degree to build up the position which Germany held before the war in the chemical industry. His name is inseparably associated with the artificial production of indigo, on which he began his researches in 1865. His patents were acquired in 1880 by the Badische Anilin und Soda Fabrik and the Hoechst Farbwerke, which concerns carried out conjoint research for 18 years, spending about $5,000,000 on the problem. Two satisfactory processes were finally developed for the manufacture of indigo from coal-tar products, one starting from naphthalene and the other from benzene *via* aniline. Baeyer was awarded the Davy medal for the Royal Society (England) in 1881 for his researches in indigo and receive the Nobel prize for chemistry in 1905. His works were published at Brunswick (2 vols., 1905).

**BAEYER, Johann Jakob,** Prussian soldier and geometrician: b. Müggelsheim, 5 Nov. 1794; d. September 1885; was an army volunteer in the War of Liberation, and became a lieutenant-general in 1858. He had charge of a number of geodetic surveys; was elected president of the Geodetic Institute in Berlin in 1870; and was the author of numerous treatises on the refraction of light in the atmosphere, the size and form of the earth, etc.

**BAEZ,** bā'ăth, **Buenaventura,** Dominican statesman: b. Azua, Haiti, about 1810; d. 21 March 1884; aided in the establishment of the Dominican Republic; was its President in 1849–53; was then expelled by Santa Ana and went to New York; was recalled in 1856 on the expulsion of Santa Ana, and again elected President; and was re-elected President in 1865 and 1868. During his last term he signed treaties with the United States (29 Nov. 1869) for the annexation of Santo Domingo to the United States, and for the cession of Samana Bay. The treaties failed of ratification in the United States Senate, and caused the downfall of Baez.

**BAEZA,** bä-ā'thą, Spain, town of Andalusia, 22 miles east-northeast from Jaén. It is pleasantly situated on a height amid rich and well-watered plains, and from a distance presents a very striking appearance with its old walls, churches and steep-roofed houses. It has several good streets and three squares, one of which is lined by a range of porticoes. The principal edifices are the cathedral, the old Aliatares tower, the town-hall with a fine façade, and an old monastery, now a theatre. The leading products are barley, wheat, vegetables and oil, and there are manufactories of spirits, soap and leather. Many cattle are raised in the district. Pop. (1910) 15,843.

**BAFFIN, William,** English navigator: b. about 1584; d. 23 May 1622. He visited west Greenland as a pilot in 1612, again in 1615, and

made voyages to Spitzbergen in 1613 and 1614. In 1615 he ascertained the limits of that vast inlet of the sea since distinguished by the appellation of Baffin Bay, and also discovered and named Smith's Sound, Lancaster Sound, etc. In 1617–22 he was in the employment of the East India Company, and on board vessels belonging to them in the Indian seas. He was killed at the siege of Ormuz, on the Persian Gulf.

**BAFFIN BAY,** an inland sea or gulf in North America, part of the extensive strait that separates Greenland from Baffin Land. It is 800 miles long, with an average breadth of 280 miles. Depth, 200 to 1,480 fathoms. The tides do not rise more than 10 feet. The surface of the sea is covered with ice during the greater part of the year, which extends from shore to shore in winter, though possessing a slow, southward movement. In spring and summer the great mass, known as the middle ice, begins to move less slowly southward, leaving navigable passages and occasional channels, or crossings, between the coasts. The coasts are mountainous, barren and deeply indented with gulfs. Whale and seal fishing is followed. This sea was discovered by the English navigator, Baffin (q.v.), in 1615, while in search of the North-west Passage.

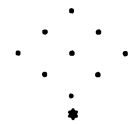
**BAFFIN LAND,** a barren island west of Greenland, in the Canadian district of Franklin. Approximate area, 240,000 square miles: the fourth largest island in the world. It is about 1,000 miles in length, the breadth varying from 200 to 500 miles. The eastern side is crowned by an ice-capped plateau, from 5,000 to 8,000 feet high. Bernhard Hantzsch, a German scientist, died here in June 1911 while on an exploring expedition, and his account with maps was published in 1913.

**BAFULABE,** bä'fū-läb, a town of the French Sudan, at the junction of two headstreams of the Senegal, connected by railway with Kayes on that river.

**BAGAMOYO,** bä'gą-mō'yō, German East Africa, a seaport and commercial centre opposite Zanzibar, and north of Dar-es-Salaam. It has few stone houses, as the natives, who constitute the bulk of the population, live mostly in huts. Though it has no harbor and its coast is often swept by hurricanes, it has a considerable trade in ivory, copra, caoutchouc, etc. It has a fort, government house, customhouse, post-office and telegraph building station of the German East African Association, government school and a park, with a monument to the troops who fell during an uprising of the natives in 1889. The climate is unhealthful for Europeans. Pop. about 25,000.

**BAGASSE,** bą-găs', the name given to sugar cane in its dry, crushed state, as delivered from the mill, and after the main portion of its juice has been expressed; used as fuel in the sugar factory, and called also cane trash.

**BAGATELLE,** băg'ą-tĕl', a table ball game of the class of billiards, played on a table semicircular at the top end. The tables vary from 6 to 7 feet in length and are usually about 3 feet 6 inches wide. The game is played by two or more, one against the other. There are nine balls, eight white and one black, and nine holes sunk in the far end of the table in a diamond shape, numbered respectively 1, 2, 3, 4, 5, 6, 7, 8, 9.



The black ball is placed on a spot * in front of the foremost hole. The player then takes one of the white balls, and placing it within a balk line at the lower end of the table, strikes it with the cue in such a manner that it strikes the black ball; both balls go on their courses and fall, or not, into one or other of the open cups. Whichever cup the black ball falls into counts double the number of points normally allotted to it. Then the player, in like manner, plays the remaining seven balls up the table. For so many cups as he fills he counts up his dots, and that is his score. The highest wins. In France and England the bagatelle balls are four red, four white and one black.

**BAGAUDÆ,** or **BAGAUDI,** a body of Gallic insurrectionists of the rural class, who revolted against the Romans 270 A.D., headed by one Victoria, called by the soldiers Mother of Legions. Claudius temporarily quelled them, and Aurelian, by a remission of their taxes in arrears, and by granting them a general amnesty, made peace with them. Under Diocletian, 280 A.D., they rose again, and their two leaders assumed the title of emperor; but they were soon compelled to capitulate, though they retreated to an island formed by the confluence of the Marne and Seine, and made a desperate stand for the victory. The place of this sanguinary contest was long known as the *Fosses des Bagaudes.* From this period, the Bagaudæ may be considered as gradually transforming their activity into a kind of brigandage, which infested the forests and fastnesses of Gaul until the end of the Western empire.

**BAGBY, George William,** American physician and humorist: b. Buckingham County, Va., 13 Aug. 1828; d. 29 Nov. 1883; educated at Delaware College; wrote under the pseudonym, Mozis Addums. He was editor of the Lynchburg *Express* (1853), and *Southern Literary Messenger* (1859); State librarian of Virginia (1870–78), and contributor to various magazines. He wrote 'John M. Daniel's Latchkey' (1868); 'What I Did With My Fifty Millions' (1875); and 'Meekins' Twinses' (1877). His works were collected in three volumes (Richmond 1886). Consult Trent, 'Southern Writers' (1905).

**BAGDAD,** Turkey, capital of the vilayet of Bagdad, situated on the Tigris. The old Bagdad, the residence of the caliphs, said to have had 2,000,000 inhabitants, was situated on the western bank of the river and was one of the most magnificent cities of the Mohammedan world. The modern city lies mostly on the eastern bank of the river and is surrounded with a brick wall about six miles in circuit, partly in a ruinous condition, and with a ditch from five to six fathoms deep, intended to be filled with water from the Tigris. The houses, mostly built of brick, are but one story high, the streets unpaved, and so narrow that two horsemen can scarcely ride abreast. The houses

of the wealthy are distinguished by a better architecture. Of the mosques, about 100 in number, only a few attract much notice, and many are in ruins. Their architecture is in general inferior to that of other Mohammedan cities, but they have a gaudy appearance from the glazed tiles covering their domes and minarets, and arranged in a kind of mosaic work in various colors. In the vicinity are situated tombs held in high reverence by the natives and visited annually by thousands of pilgrims. The bazaars are spacious and well stocked with goods. That built by Daoud Pasha still ranks as one of the most splendid in the world. Bagdad long commanded a large part of the traffic between Europe on the one hand, and Persia and India on the other. The Persian and Indian trade is still considerable, as also that with Europe, a large portion of it being carried on by steamers up and down the river. The trade with Europe was formerly more largely by land, passing through the Syrian Desert to Damascus, or by way of Armenia northward. Since the opening of the Suez Canal the sea routes are of far more importance. The traffic from India has declined somewhat, but, owing to development of railway facilities, it is the mart through which pass the imports and exports of Mesopotamia. Wool is the chief export to Europe, others being wheat, gum, galls, dates, horses, various Oriental fabrics, skins, tragacanth, feathers and leather articles. Imports include iron and copper, sugar and coffee. There are numerous manufactures of copper utensils, cloth and felts, etc. The heat of the summer is oppressive in Bagdad, but the winter is cold enough to make a fire necessary. The climate is on the whole agreeable and healthful, though sometimes the plague prevails. Bagdad is inhabited by Turks, Arabs, Persians, Kurds, Armenians, Jews and a small number of Christians. The Turks compose three-fourths of the whole population. The Jews are confined to a certain district of the city, and are in a very oppressed condition. The population of the city, according to the most recent estimate, amounts to between 175,000 and 200,000.

Bagdad was founded in 762 by the Caliph Almanzor, and was raised to a high degree of splendor in the 9th century by the famous Harun al-Rashid, who figures so often in the 'Arabian Nights.' It then became the chief city in the Moslem world and a great centre of culture and learning, but at present its high schools or medresses are few in number, and its importance rests solely on its commerce. In the 13th century it was stormed by Hulagu (Holagou), grandson of Genghis-Khan, who caused the reigning caliph to be slain and overthrew the caliphate. The descendants of the conqueror were expelled in 1392 by Tamerlane. In the 15th century Shah Ismael, the first sovereign of Persia of the house of Sofi, took possession of the city. From that time it was a perpetual subject of contest in the wars between the Turks and Persians. After a memorable siege in 1638 it was conquered by the Turkish Emperor, Murad IV, and Nadir Shah endeavored in vain, in the 18th century, to wrest it from the Turks.

Early in 1917 British forces, advancing up the Tigris, took Kut and pushed on toward Bagdad. On 10 March the last Turkish position south of the city was attacked, and that night the Turks evacuated the city, which at daybreak of the 11th was occupied by the British. See WAR, EUROPEAN; MESOPOTAMIA CAMPAIGN.

**BAGDAD RAILWAY,** Asiatic Turkey, an enterprise of international importance in which is bound up the future political control of large regions in Asia Minor, Mesopotamia and the Persian Gulf. The line over 1,400 miles long, extending from Konieh on the existing Anatolian Railway through the Taurus range, and by way of the valley of the Euphrates, Nisibin, Mosul, Kerkuk, the Tigris, Bagdad, Kerbela and Nejef is projected eventually to reach Basra on the Persian Gulf, thus establishing through connection from Europe. Engineered by Baron Marschall von Bieberstein, the German diplomat, on 27 Sept. and 4 Oct. 1888, the first German company obtained power to exploit the Haidar-Pasha-Ismidt Railway by the concession for 99 years of a railway to run from Ismidt to Angora. This was financed by the Anatolian Railway, backed by the Deutsche Bank. On 15 Feb. 1893 the company was authorized to extend the railway from Ismidt to Konieh. This work covering the first 535 kilometres of the Bagdad Railway was completed in 1896. Early in October 1898, Kaiser William II visited the Sultan at Constantinople, and obtained the promise of a concession for a railroad from Konieh to the Persian Gulf. Negotiations and surveys led in November 1899 to an *irade* approving of the German offers and to the convention of 16 Jan. 1902, which, definitely revised and brought up to date 5 March 1903, formed the charter of the enterprise. The "Société Ottomane des Chemins-de-Fer de Baghdad" was established with a capital of $3,000,000, of which only the half was actually paid up. The company acted as broker between the Turkish government, which borrowed the sums necessary for the construction of railways, and the European capitalists. A series of complicated arrangements between the two parties had to be adapted to circumstances from year to year. The entire network of railways from Konieh to Basra was divided into sections of 200 kilometres each. But this was found impracticable and the sections had to be built of unequal lengths. The Ottoman government and the railway company concluded separate agreements for each section, the different financial and technical problems being regulated by such agreements. The first section of 200 kilometres from Konieh to Eregli, regulated by one of the conventions signed 5 March 1903, was completed and ready for service October 1904. The second section of about 840 kilometres from Eregli to El Hejef through the Taurus range, was financed by the agreement of 2 June 1908. For some years technical and financial obstacles prevented its completion, and work owing to great tunneling difficulties was suspended May 1914, the railhead ending at Dorak. A convention signed at Constantinople 20 March 1911 provided for the building of the third section of about 600 kilometres from El Helif to Bagdad, and a convention respecting the last section of the line from Bagdad to Basra, about 600 kilometres, was being discussed by Turkish and German statesmen when the European War broke out in 1914.

**BAGEHOT,** bāj'ŏt, **Walter,** English economist, journalist and critic: b. Langport, Somer-

setshire, England 3 Feb. 1826; d. Langport, 24 March 1877. His father, Thomas Watson Bagehot, was vice-chairman of the Somersetshire bank, founded by Samuel Stuckey in the 18th century. His mother, a niece of Stuckey, a woman of much character and lively mind, had, through an earlier marriage, been brought into an excellent intellectual atmosphere from which, says Hutton, "she greatly profited." Bagehot, a boy of naturally keen mind and with a habit of reading, was educated with much good judgment. He first attended school in Bristol, whence, in 1842, he entered University College, London, graduating B.A., in 1846, and M.A., with much honor in philosophy and political economy, in 1848. He was also distinguished as a mathematician and was widely read in poetry, metaphysics and history. Then he took to reading law, but, though very fond of the study and though called to the bar in 1852, he never practised. Instead he entered the banking business under his father in Langport. He had previously, in 1851, spent some time in Paris during the exciting days of the *coup d'état* of Napoleon III. His first essays in journalism were accounts of the affairs of France contributed to a little weekly newspaper, the *Inquirer*. Herein Bagehot astounded his friends by a somewhat youthfully cynical support of the cause of Napoleon, on the paradoxical ground that the French were too clever to be successful as a self-governing people. Stupidity, according to his views at that time, was, says Hutton, essential to political freedom.

While in business, Bagehot contributed to reviews,—first to the *Prospective Review* and after 1855 to the *National Review*,—various biographical and critical articles. These, and also several sketches originally published as 'Estimates of Some Englishmen and Scotchmen' (1858), were collected after his death in 'Literary Studies' (2 vols., 1878), and 'Biographical Studies' (1880). In time they extend from 1852 to Bagehot's death. The essays "which best represent his peculiar genius" (Hutton) are 'The First Edinburgh Reviewers,' 'Hartley Coleridge,' and 'Bishop Butler,' but such essays as those on Gibbon, Shelley, Clough, Dickens and Wordsworth, Tennyson and Browning, are among the most vigorous pieces of English criticism. All are distinguished by a dash and keenness of phrase and an uncommon faculty for sane and broad generalization.

In 1858 Bagehot married Miss Wilson, eldest daughter of the Right Hon. James Wilson, who had founded the London *Economist* during the anti-corn law agitation to represent free-trade sentiment. In 1860 Bagehot became editor, and there remained till his death. His practical knowledge of men, his great experience in business and extensive studies enabled him to win success in this field, and also to write the books on which his fame as an economist chiefly rests. These are 'The English Constitution' (1867), which is extensively used as a textbook and has been translated into French, German and Italian; 'Physics and Politics' (1872), which has been even more widely translated; and 'Lombard Street' (1873), a study of the money market. Besides the books already named there appeared after Bagehot's death 'Economic Studies,' a collection of earlier work, and 'The Depreciation of Silver.' Bagehot's counsel was much sought for in financial and economic questions. He tried on several occasions, with honesty rather than zeal, to be elected to Parliament, but never succeeded.

Bagehot, both as a student of institutions and of men, is entitled to high rank. To this study he brought, in spite of some natural prejudice in favor of the institutions and men of his native land, a mind of thoroughly scientific bent and much detachment. As a student he is interested in fundamental questions rather than in minutiæ. His broadest book, 'Physics and Politics,' is an example of this, and may be regarded as an exposition of his main methods and interests. It is an attempt to show how the principle of the survival of the fittest applies to the formation of states. The thesis is that in earliest times and even down nearly to the present, the people who had the faculty of organization and obedience, whether in family, tribe or nation, were bound to prevail over those less organized, and that hence obedience to laws or rulers of whatever sort was necessary to political success, until the habit of legality became ingrained. Hence the nation with the best military power could seize the best parts of the earth. If, however, the process stopped with organization, the nation would in time present a case of arrested development, and would no longer progress; for the principle of variation, or originality, is also necessary to complete progress. The best instrument for the cultivation of variation is free discussion. Hence arises the explanation of the fact that the western nations of Europe are far in advance of the rest of the world, in that they have tempered the rule of custom with discussion, which has historically been practically limited to peoples of Greek and Germanic origin. And in general, on the other hand, discussion is useful in checking the impulse to hasty action, a relic of primitive civilizations. Bagehot's other longer works are really exemplifications of this principle: 'The English Constitution' is substantially an examination of the means of discussion in England and a comparison of it with that in other states; 'Lombard Street' is an analysis of one of the phenomena of variation with a view to expounding and criticising it as an efficient means of progress.

Bagehot's criticism of literature is likewise distinguished by breadth and a fondness for the analysis of causes. It is the criticism, not of taste or of morals, of the beautiful or the good and bad, but of types. The manner in which the mind of his author worked, the type of person he was, are the fundamental questions of interest with Bagehot. The title, for example, of his excellent essay on certain famous poets illustrates this: "Wordsworth, Tennyson and Browning; or, Pure, Ornate and Grotesque Art in English Poetry." These poets are treated as examples of the three different types of mind and expression named in the title. Dickens is an example of the "irregular" genius, Hartley Coleridge of the whimsical and wayward mind with a gift for self-revelation, Shakespeare, among other attributes, of the experiencing mind. Bagehot's criticism is, in all these essays, never formal or academic, but is based on a wide practical knowledge of men. His point of view he maintains with great consistency, but always enlivens his criticism with such an

abundance of keen and witty observations that his criticism is unsurpassed in vigor and is never dull. He, however, founded no school as certain other critics have done; for his criticism is essentially that of a lively personality and the impressionism of a scientific and detached mind.

**Bibliography.**— The chief authority for Bagehot, besides his own work, is R. H. Hutton, 'Memoir' prefixed to 'Liberty Studies,' and 'Dictionary of National Biography.'

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**BAGGAGE,** probably from the old French word *bague,* meaning bundle. As ordinarily used it includes trunks, valises, portmanteaus, etc., which a traveler carries with him on a journey. In a military sense the word includes tents, furniture, utensils, etc.

**BAGGARA,** bäg'gä-rä, an Arabic-speaking Hamitic tribe of the upper Nile Valley. They occupy this valley as far east as the territory of their neighboring negro tribesmen, the Shilluk. They are nomads, Egyptian soldiers, hunters, etc.

**BAGGESEN,** bag'gē-sĕn, **Jens,** Danish poet, who also wrote much in German: b. Korsör, 15 Feb. 1764; d. Hamburg, 3 Oct. 1826. His 'Comic Tales,' which appeared in 1785 had an instantaneous success; but an opera he produced four years later was a fiasco, and in disgust he left Denmark. He returned in 1791, but shortly withdrew, and spent a wandering life on the Continent for the next 20 years. His work was conservative in its form, and he was intensely jealous of the reception accorded to the romantic poems of Oehensläger. He possessed great sensibility and imagination, and his works are said to present a singular mixture of contradictory qualities. His best productions are his smaller poems and songs, several of which are very popular with his countrymen. The 'Labyrinth' (2 vols., 1792–93), a poem descriptive of his travels, is perhaps his most famous work. His Danish works were published in 1827–32.

**BAGHELKHAND,** bä-gĕl-kŭnd', India, a tract of country comprising the native states of Rewah, Nagode, Maihar, Sowahal and eight of lesser importance, under the governor-general's agent for central India; area, 14,706 square miles; pop. (1911) 1,772,574.

**BAGHERIA,** bä'gā-rę'ą, or **BAGARIA,** Sicily, town in the province of Palermo, eight miles east by south of the city of Palermo by rail. It is beautifully situated at the base of the isthmus which separates the Bay of Palermo from that of Termini and is surrounded by groups of palatial villas of the Sicilian nobility. Among them are the Villa Palagonia, celebrated by Goethe, and the Villa Valguarnera, which has one of the most beautiful prospects in Sicily. Pop. (1911) 21,212.

**BAGIMONT'S, ROLL,** bāj'i-mŏnts, a rent-roll of Scotland made up in 1275 by Baiamund or Boiamond de Vicci, vulgarly called Bagimont, who was sent from Rome by the Pope, in the reign of Alexander III, to collect the tithe of all the Church livings in Scotland for an expedition to the Holy Land. The Scottish clergy opposed its imposition; but their objections were repelled; and it remained the statutory valuation, according to which the benefices were taxed, till the Reformation. A copy of it as it existed in the reign of James V (1513–42) is in the Advocates' Library, Edinburgh. Consult publications of the Switees Society, Vol. XII, and Statuta Ecclesiæ Scoticanæ (Bannatyne Club, 1866).

**BAGINSKY,** ba-gēn'skĭ, **Adolf,** German physician: b. Ratibor 1843. He was educated at Berlin and at Vienna. From 1881 to 1892 he was privatdocent on children's diseases at the University of Berlin, and in 1892 became extraordinary professor at that institution. In 1880 he founded and became coeditor of the *Archiv für Kinderheilkunde.* In 1890 he became director of the Kaiser- und Kaiserin-Friedrich Krankenhaus at Berlin, an institution devoted principally to the treatment of the infectious diseases of children. He has published 'Handbuch der Schulhygiene' (3d ed., 1898–1900); 'Lehrbuch der Kinderkrankheiten' (8th ed., 1905); 'Pflege des gesunden und kranken Kindes' (3d ed., 1885); 'Das Leben des Weibes' (3d ed., 1885); 'Die Antipyrese im Kindesalter' (1901); 'Säuglingskrankenpflege und Säuglingskrankheiten' (1906); 'Die Kinderaussage vor Gericht' (1910).

**BAGIRMI,** bą-gēr'me, Africa, a Mohammedan negro state, situated partly between Bornu and Wadai, to the southwest of Lake Tchad, and watered by the Shari, which falls into Lake Tchad, and by its tributaries. It has an area of about 65,000 square miles, and about 1,000,000 inhabitants; but both its area and population fluctuate according as it encroaches on or is encroached on by its neighbors. The whole country is a plain 900 feet above the level of the sea, well suited for the cultivation of sorghum, which is accordingly the principal breadstuff. Sesame, beans, cotton and indigo are also cultivated. The government is an absolute monarchy, but the ruler pays tribute to Wadai. An armed force, estimated at over 10,000, is maintained. The prevailing religion is Islam, which was introduced in the 16th century. Bagirmi was formerly included in one state with Bornu and Wadai. An inexhaustible supply of slaves is found in the heathen negro states to the south, at the expense of whom also Bagirmi, when pressed by its Mohammedan neighbors, extends its territory. By Great Britain and Germany Bagirmi has latterly been recognized as within the French sphere of influence, and in 1897 a treaty was concluded between the French government and the Sultan. There is a French resident in Chekna, the capital. The former capital, Massenya, was destroyed in 1898. At the end of 1899 Rabah, a usurper of Bornu, invaded the state, but was speedily defeated by the French troops. His sons continued the contest, but by May 1901, the country was completely pacified.

**BAGLEY, Worth,** American naval officer: b. Raleigh, N. C., 6 April 1874; d. 11 May 1898. He was graduated at the United States Naval Academy in 1895; promoted to ensign 1 July 1897, and was detailed as inspector to the new torpedo-boat *Winslow,* in November following. This boat went into commission the next month, and he was appointed her executive officer. In April 1898 the *Winslow* was assigned to the American fleet off the coast of Cuba, and on 9 May, while on blockading duty

at the harbor of Cardenas, with the *Wilmington* and *Hudson,* drew the fire of several Spanish coast-guard vessels. All the American vessels escaped untouched. Two days afterward the three vessels undertook to force an entrance into the harbor, when they were fired on by Spanish gunboats. The *Winslow* was disabled, and with difficulty was drawn out of the range of the enemy's guns. The *Wilmington* then silenced the Spanish fire, and as the action closed, Ensign Bagley and four sailors on the *Winslow* were instantly killed by a shell, he being the first American naval officer to fall in the war with Spain.

**BAGLIONI,** bä-lyō'nę, a historical family of Perugia in Italy. Perugia contained two parties — an aristocratic and a democratic one. The Baglioni belonged to the former. In the 12th century LUDOVICO BAGLIONI was appointed imperial vicar of Perugia by Frederic Barbarossa, who styles Baglioni his relative, as coming, like himself, from the ducal house of Swabia. In 1393, 70 Perugian gentlemen, and among them two Baglionis, were killed in a street fight by the populace, and the whole aristocratic party was expelled from the city. BRACCIO BAGLIONI, in the service of the Pope, defeated Francisco Sforza, near Lodi, in 1453, and was made lord of Spello by Sixtus IV. GIAN PAOLO BAGLIONI began life as a condottiere; then availing himself of the dissensions of his native state he obtained supreme power over it and made alliance with Pandolfo Petrucci, ruler of Sienna. He was driven out of Perugia by Cæsar Borgia in 1502. Returning in 1503, after the death of Alexander VI, he was banished again, in 1506, by Julius II. He then entered the service of the Venetians in the war of the league of Cambray. He resumed his old position as ruler of Perugia in 1513. Here he created so much scandal that Leo X, who at first passed over his usurpation, summoned him to Rome, threw him into the castle of Saint Angelo, had him tried and he was beheaded at Rome in 1520. MALATESTA and ORAZIO, his sons, recovered possession of Perugia after the death of Leo. Orazio turned condottiere in the service of France, and was killed in the Neapolitan expedition of 1528. Malatesta remained in Perugia until 1529, when he was driven out by the Papal and Imperial troops. He died at Perugia in December 1531. In the 16th century ASTORRE BAGLIONI served Charles V in Italy and on the coast of Tunis, and rose high in the favor of Pope Paul III, who restored to him his paternal estates. He then entered the Venetian service, and was governor of Famagosta in Cyprus when the Turks besieged it in 1570. After a brave defense he was obliged to capitulate on condition of being sent home to Venice with his garrison. But Mustapha Pasha, disregarding the terms, caused Baglioni and the other Venetian officers to be beheaded.

Another family of the name Baglioni, belonging to Florence, produced several sculptors and architects during the 15th and 16th centuries. GIOVANNI BAGLIONI, a native of Rome, was a celebrated art historian and painter.

**BAGNACAVALLO,** bä'nyą-ką-väl'lō, **Bartolomeo Ramenghi,** Italian painter: b. 1484; d. 1542; called Bagnacavallo from the village where he was born. At Rome he was a pupil of Raphael and assisted in decorating the gallery of the Vatican. His best works are 'Disputation of Saint Augustine' and 'A Madonna and Child,' both in Bologna.

**BAGNÈRES-DE-BIGORRE,** ba'nyăr' dĕ bę-gôr', France (anciently *Aquensis Vicus, Aquæ Bigerronum*), celebrated watering-place in the department of Hautes-Pyrénées, capital of the arrondissement of the same name, at the entrance of the valley of Campan, on the left bank of the Adour, 13 miles south-southeast from Tarbes. Its site is one of the most romantic in the Pyrenees. Well-cultivated slopes surround it on all sides, and are terminated in the distance by a mountain range, the most conspicuous summit in which is the Pic du Midi. The town is well built and contains several good squares and numerous spacious, handsome streets. There are about 30 mineral springs of varied temperature and of different chemical composition, each of which is considered a specific for different diseases. Bagnères owes its chief celebrity to its baths, which are sulphurous and saline. There are 10 bathing establishments, of which the principal, known as the Fracasti, is very complete, and is the largest and most handsome building of the town. It stands at one of its extremities, immediately under Mount Olivet, and is approached by a long avenue of poplars winding through a verdant valley. About 25,000 or 30,000 invalids and tourists visit the place annually. It is a centre for winter sports, and many fêtes are arranged each year. The inhabitants depend chiefly on the baths, almost every house receiving lodgers; but the manufactures are of some importance. The chief of these are a kind of crape and a fine woolen gauze woven into shawls and scarfs. There are marble quarries in the neighborhood, from which come a high grade of table tops and chimney pieces. The springs here were known to and used by the Romans, and various ancient remains are still in existence. Pop. (1911) 8,455.

**BAGNÈRES-DE-LUCHON,** ba'nyăr' dĕ lü-shôń, France, town in the department of Haute-Garonne, one of the principal watering-places of the Pyrenees, having sulphurous thermal waters said to be beneficial in rheumatic and gouty complaints, nervous ailments, skin diseases, etc., and used chiefly as baths. It is divided into an old and a new town, situated in the picturesque valley of Luchon, surrounded by hills covered with wood. The new town has fine streets and promenades, and several villas and gardens. The main street forms a splendid avenue, at the west end of which the large bathing establishment is placed. There is also a large and splendid casino building of recent erection, comprising a theatre, concert and ball rooms, etc., and containing a large-scale model of the Pyrenees, giving an excellent idea of the configuration of the range. The neighborhood exhibits some of the most interesting scenery of the Pyrenees. Visitors number from 30,000 to 40,000 annually, and are most numerous in the months of July and August. Bagnères-de-Luchon has 48 mineral springs of varied temperature and composition. It is the Thermæ Lixonienses of the Romans, and for many centuries was practically deserted. Mégret d'Etigny had the waters analyzed in 1751, and at once drew attention to their prop-

erties. As a resort, however, it dates from the early years of the 19th century. Resident pop. (1911) 3,415.

**BAGNES,** bąn', or **BAZNE, Val de,** Switzerland, picturesque valley in the canton of Valais. It is watered by the Dranse, a tributary of the Rhone, and is surrounded by mountains, of which the highest peaks are Grand Combin, 14,164 feet, and Mont Gelé, 11,000 feet. There are glaciers in the valley, and waterfalls abound along the river, which has sometimes overflowed and inflicted considerable damage. Chable, the chief town of the valley, is often called Bagnes.

**BAGNES,** the convict prisons of France. Until 1748 serious crimes were punished by terms of service in the galleys; after which convicts were employed in hard labor in arsenals and similar public works. The name Bagnes ("baths") is supposed to have come from the fact that the slave prisons at Constantinople were adjacent to the baths of the Seraglio. In 1792 the sufferings of the convicts were mitigated and the name "travaux publiques" substituted for the hated term "galères." Until 1832 criminals continued to be branded with a hot iron. The treatment of convicts at the bagnes was always cruel; men were chained in couples; their food was poor, and they were herded together at night like cattle. The latest establishments of the type were at Toulon, Rochefort and Brest, Toulon not being finally emptied until 1870, although these prisons had been abolished in 1854. Consult Zaccone, 'Histoire des bagnes' (Paris 1875), also Victor Hugo's 'Les misérables.'

**BAGOT, Sir Charles,** British diplomatist: b. 23 Sept. 1781; d. Kingston, Canada, 19 May 1843. He was the second son of William, 1st Baron Bagot of Bagots Bromley. In 1807 he was appointed Under-Secretary of State for Foreign Affairs in the Canning administration; in 1814, Minister to France; in 1815 Minister to the United States, securing by his diplomacy the neutralization of the Great Lakes; in 1820, Ambassador at Saint Petersburg; and in 1824, Ambassador at The Hague. On the death of Lord Sydenham in 1841 he was made governor-in-chief of the Canadas, which office he held till his death.

**BAGOT, Richard,** English bishop, brother of the preceding: b. 22 Nov. 1782; d. 15 May 1854. In 1829 he was appointed bishop of Oxford, and in 1845 he was translated to the bishopric of Bath and Wells. During the Tractarian controversy he was violently assailed for his alleged Puseyite sympathies, and for his induction of the Rev. M. Bennett into the living of Frome. This had such an effect on Bishop Bagot that his intellect became disturbed.

**BAGPIPE,** a well known wind instrument, of high antiquity among various nations, and so long a favorite with the natives of the Highlands of Scotland that it may now be considered as their national instrument. The peculiarity of the bagpipe consists in the fact that the air producing the music is collected into a leathern bag, from which it is forcibly pressed into the pipes by the arm of the performer. The *chanter,* a pipe into which is inserted a reed for the production of the sounds by the action of the air from the bag, is perforated with holes like the German flute, which are stopped with the fingers. The other parts of the instrument, in the common Highland form, are three tubes or *drones,* which are also furnished with reeds. Two of the drones are in unison with D on the chanter, which corresponds with the lowest note of the German flute. The third drone, which is the longest, is an octave lower. The tuning of the bagpipe is accomplished by lengthening or shortening the tubes or drones, as may be required. Its compass is from the G of the treble stave to the A above it, but its scale is imperfect. The Highland bagpipe is a powerful instrument, and calls for great exertion of the lungs, the air being forced into the bag by a pipe held between the lips. The Irish bagpipe is smaller, softer in its notes, and is always played with bellows that force the air into the bag. It has a number of keys on the chanter and drones, and is a much more perfect instrument musically than the Highland. A Lowland Scotch form of the bagpipe is also played with bellows. It is not known when the bagpipe first found its way into Scotland, but it is probable that the Norsemen first introduced it into the Hebrides, which islands they long possessed. In England it was common from Anglo-Saxon times, and is familiarly referred to by Chaucer and Shakespeare. The bagpipe is indeed of very ancient origin, as representations of it are to be found on Grecian and Roman sculptures; and it has long been well known among various eastern nations. In Italy to this day, or at least in certain parts of it, the bagpipe (cornamusa) is still a popular instrument among the peasantry, but the Italian form of it is more simple than the Highland and Irish.

**BAGRATIDÆ,** bąg-ra'tī-dē, or **BAGRATIANS,** a line of kings and princes of Armenia that ruled in that country from the year 885 to the 11th century. After the seizure of Asia Minor by the Seljuks, some of the princes retained power as independent lords, holding the possession of mountain fastnesses. The dynasty ended with Leo IV, who was assassinated in 1342.

**BAGRATION,** bą-grā'tę-ōn', **Peter, Prince,** Russian general, of the Georgian Bagradite family: b. 1765; d. 7 Oct. 1812. He entered the Russian army in 1782 as a common soldier; and in a long military career rose to the highest grades, and gained a place among those Russian generals the most celebrated for their stubborn, unyielding bravery. Having been created a lieutenant-general, he commanded the vanguard of the Austrian army at Austerlitz, under Prince Lichtenstein. In the Prussian campaign of 1807, his resistance made the battle of Eylau so terrible that even Napoleon shuddered at its bloody results. The same is said of him at the battle of Friedland. In 1808 he made a daring march across the frozen Gulf of Finland, overrunning western Bothnia and the Aland Isles; in 1809 he fought at Silistria, and destroyed the Turkish force brought up from Adrianople to relieve that fortress. In 1812 he fought an unsuccessful battle with Davoust at Mohileff, but succeeded, nevertheless, in joining the Russian main army. He was mortally wounded at the battle of Mojaïsk, or Borodino, 7 Sept. 1812, just a month before he died.

**BAGSHAW, Edward,** English author: date of birth unknown; d. 1662. He espoused at first the cause of the Puritans, but later became a Royalist, and sat in the Parliament that Charles I convened at Oxford; was taken prisoner by the Parliamentary army, and during his detention composed various books, the most important of which is 'The Right of the Crown of England as Established by Law.'

**BAGSHOT HEATH,** a level tract in England, now used as a field for military manœuvres. It is famous as the site of many highway robberies in the 18th century.

**BAGSTOCK, Major Joe,** an apoplectic, gluttonous character in Dickens' novel, 'Dombey and Son.'

**BAGWORM,** or **BASKETWORM,** a common caterpillar of a moth (*Thyriadopteryx ephemeræformis*), found in large numbers throughout the northern part of the United States. The male has a dark body and light wings, but the egg-laying female is wingless. The larva lies head downward in a sac or case covered with bits of leaves (so that it looks like a basket), where it finally transforms, the worm-like female remaining in its case, while the male flies sluggishly about, and may be known by its hairy body and small transparent wings. When the young hatch (in May), they crawl on a leaf, gnawing little bits from the surface and fastening them together with a thread. They present a comical sight when the baskets are partly completed, walking about, tail in the air, with the body hidden in the case. As they grow older the body is entirely protected by the sac, which they drag about when in motion. These insects frequent the trees in city parks, especially junipers, in great numbers, and are apt to be detrimental to foliage unless destroyed by scraping off the cocoons. Certain small species occur on the orange in Florida, and others in the tropics. See FAGOTWORM.

**BAHADUR,** bą-hä'door ("Valiant"), the last Great Mogul from the house of Tamerlane: b. 1767; d. 1862. When the British captured Delhi, he was taken prisoner, and sent to Rangoon. He was also a poet and wrote a number of songs.

**BAHAISM,** a religious movement started by Mirza Ali Mahomet (1819–50) in Persia about the middle of the 19th century. He preached that the Mohammedan religion had become corrupt and needed reformation, that the clergy were ignorant and vicious, that the Koran was not the final revelation, but that a new prophet was to come in the near future who should preach a new gospel to a new generation, which should conform to the needs of modern scientific knowledge and social tendencies and should, therefore, be greater than any previous revelation made to any people at any time. He also proclaimed the spiritual equality of women with men. As his gospel appealed powerfully to the down-trodden masses, his success was immediate and so great that the Mohammedan priesthood became alarmed; and they used their influence with the government to have the daring preacher arrested on the charge of hostility to state and religion. Ali Mahomet, who had taken the religious name of "Bab" (the door or gate), foretold his own death at the hands of the authorities, but, at the same time, he comforted his followers with the assurance that another and greater than he would soon appear to carry on his work. After a mock trial, in which the mullahs of the Mohammedan Church did the prosecution, he was condemned and shot on the public square at Tabriz, July 1850. The immortality of the soul and the omnipotent love of God extended to every creature upon earth constitute the foundation of Bahai theology; but it reaches out and attempts to reform institutions of all kinds, including those of the state. It teaches that loyalty is due to institutions, causes and religious creeds only so long as they represent the cause of humanity and the progress and evolution of the race. While Bahaism proclaims no loyalty to any selfish or outworn creeds and organizations, its prophet issued a stern warning against mistaking the obstructive and destructive for the constructive. He held out the hand of friendship to all creeds, all religions, all societies and all governments, proclaiming, at the same time, the necessity of a get-together movement for the regeneration of the race and of its institutions and beliefs. He foretold the coming of a new special order in which the development of spiritualized man was to be the primary purpose and all its tendencies essentially creative. The Bahar Church possesses no ecclesiastical organization; it works socially and practically, through a popularly elected "house of justice," for the spiritual, social and moral betterment of humanity, irrespective of creed, race or social standing. But this "house of justice" has no inherent authority, since it is purely an advisory body in matters of doubt or urgency. Bahaism is, in no sense, destructive. It countenances all existing creeds, churches, societies, institutions and governments; but urges their reformation. It would work through them, patiently endeavoring to apply the golden rule for their betterment and final perfection. To this end each Bahai temple should have attached to it a college, a hospital, hospice and other social features which should be run as model institutions. It insists upon the sanctity of the individual and the spiritual and social equality of all. In this sense, it proclaims all men (and women) born free and equal, with the personal right and duty to disallow any vicarious spiritual agency. Each individual constitutes a divine creation not impeached, denied or humbled by special privileges of any other human being. Self-expression is the supreme privilege and obligation of life; and this is afforded by life itself in the means for beautiful expression, noble conduct and great and inspiring art. The inability to recognize this is a sign of spiritual insufficency; for Bahaism proclaims spiritual development as the supreme purpose and obligation of life. The state, as well as the individual, should experience spiritual growth, for without spiritual activity even social effort is sterile and self-destructive. Legislation not derived from religious vision, laws not founded upon unselfish wisdom, obstruct our social evolution; this is why social evolution moves so slowly. According to Bahaism there is no essential virtue in poverty nor essential evil in great wealth. Wealth used for the spiritual development of the possessor and the betterment of humanity is an exceedingly good thing,

as are also the arts, sciences and forces of legitimate, healthful pleasure which feed the growth of the spiritual soul; for the one great thing in life is to submit all one's activities, talents and possessions to the spiritual agency, thus transferring the centre of consciousness from *self* to an outside point and thus changing egotism into service and creating the utmost sympathy for others, sundering every tie inherently selfish, destructive or useless. The believers in Bahaism are enjoined not to withdraw from present religious organizations but to stay in their midst, reinterpreting their functions in the light of social evolution and endeavoring to vitalize their activity and remove their prejudice and ignorance which are walling them off from social unity. As citizens they are bound to obey the laws of the land while endeavoring to improve them. They should labor to unite minor organizations to make them efficient so that their influence may eventually become world-wide. Therefore duty imposes upon the believer in Bahaism the study of social problems, advanced ideas in science, economics and government, and the creation in his own mind of a living social ideal, a divine civilization. Social ethics should possess the same foundations as personal morality and spirituality, for Bahaism makes the same appeal to the institution that Christ made to the individual, to put aside self in the interest of love of one's neighbor. Therefore churches should lay aside sectarianism and denominationalism.

Bahaism appealing through its gospel of equality, fraternity and service, to the masses of down-trodden Asia, has spread with wonderful rapidity over Persia, India, Turkey and southern Russia. Most of its converts have been made among Mohammedans. In Persia alone there are said to be nearly 2,000,000 of the Bahai faith, which numbers several millions more in the other countries mentioned together with the Mohammedan states of northern Africa. Today Bahaism has its converts, its societies and its missionaries in almost every civilized country on the globe, including the United States, which has some two score centres of propaganda, proclaiming the doctrine that men should draw together for social and spiritual good and that there is little hope for the race so long as its members continue to live apart from one another, separated through fear, jealousy, shame or social inequality; for every personality overlaps every other personality, thus teaching that the one great, all-compelling aim and object of life is unity.

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**BAHAMA BANK, Great** and **Little,** shoals among the West India Islands; the former between 22° and 26° N., 75° and 79° W., having south and west the Bahama old and new channels. On it are the islands of Providence, Andros and Exuma. The Little Bank, northwest of the foregoing, between 26° and 27° N., 77° and 79° W., has on it the Great Bahama and Abaco islands.

**BAHAMA CHANNEL, Old** and **New,** two channels of the West Indies; the former separates the Great Bahama Bank and Cuba; the latter, also called the Gulf of Florida, is between the Great and Little Bahama Banks and Florida, and forms a part of the channel of the great Gulf Stream, which flows here at the rate of from two to five miles an hour.

**BAHAMAS, The,** or **THE BAHAMA ISLANDS,** were formerly known as the Lucayos, from the name of a tribe of aborigines inhabiting them at the time of their discovery by Columbus in 1492. The scene of the first landing was an island on the outer or Atlantic side of this group to which Columbus gave the name San Salvador. By the natives that island was called Guanahani, and it is now known as Watling Island. The total habitable area of the islands is small, but the extent of the group, including cays and rocks rising from banks near the surface of the water, is very great — nearly six degrees of latitude, and more than six degrees of longitude. Stretching through a total distance of 780 miles, these islands and banks form a barrier between the Atlantic and the eastern entrance to the Gulf of Mexico. To reach the Florida Strait, a large vessel must follow one of three channels: the Old Bahama, north of Cuba; the Florida or the Providence. The last passes through the group above Nassau, the capital and only important city, an attractive place with about 12,554 inhabitants.

The researches of Professor Agassiz have shown that the Bahamas are essentially different in geological formation from the Greater and Lesser Antilles, being wind-blown piles of shell and coral sand,— once much more extensive than now,— whose areas have been restricted by a general regional subsidence of some 300 feet, so that much of their former surface now occurs as shallow banks beneath the water. Mr. Robert T. Hill says: "The islands are merely the exposed tips of the great submerged ridge, having an outline and configuration which would be crudely comparable to the island of Cuba if the latter were so submerged that its highest points merely reached the surface." Their total area is 4,403½ square miles.

The Indian population having been carried away to the pearl fisheries of Panama, or to labor in the fields and mines of other Spanish colonies, the Bahamas remained deserted until, in 1629, an English settlement was begun in the island of New Providence. Twelve years later, Spain asserted her claim, based upon discovery without occupation. The English were expelled, but again attempted colonization; and Charles II, in 1680, actually granted the islands to six English noblemen and gentlemen. Early in the 18th century New Providence was twice raided by French and Spanish forces; and again it became a desert. Buccaneers of all nations made themselves at home, and held undisputed possession, until another English settlement was planted in 1718, and British troops were assigned to its defense. Tory emigrants from the English colonies on

the mainland at the time of the Revolution introduced slave labor and the cultivation of cotton — which did not thrive. New Providence was captured and held for a short time by the Americans under Commodore Hopkins in 1776; six years later it fell into the hands of the governor of Cuba, but was retaken by the loyalist Colonel Deveaux before 12 months had passed. The rights of the old lord proprietors were purchased in 1787, the Bahamas becoming a possession of the British Crown, administered by a colonial government.

During the Civil War in the United States an enormous blockade-running trade swelled the imports of the islands from a little more than $1,000,000 to upward of $26,000,000; the exports from about $800,000 to more than $23,000,000 — a period of prosperity both brief and unique. Violent storms and droughts have more than once brought ruin to the natural industries; the cultivation of small fruits, vegetables, oranges, pineapples, cocoanuts, etc., has been carried on at a disadvantage, owing to the tariff laws of the United States and the remoteness of other markets. Other forms of agriculture have been attempted, with moderate success. Sponge-fishing is carried on extensively. At the eastern end of the group are the Turks and Caicos islands, which were separated politically from the Bahamas and made a dependency of Jamaica in 1848. Grand Turk is the capital and there the chief executive officer, or commissioner, resides. From these islands 1,500,000 bushels of salt are exported annually and a large number of sponges are also gathered and exported. The total value of imports to all the islands is about $825,000, the United States supplying nearly three-fourths of that amount. Besides Turks and Caicos, the principal inhabited islands are New Providence, with about 15,000 inhabitants, Abaco, Harbor Island, Eleuthera, Inagua, Mayaguana, Ragged Island, Rum Cay, Exuma, Long Island, Long Cay, the Biminis, Grand Bahama, Crooked, Acklin, Cat, Watling, Berry and Andros Islands. The inhabitants of Great Abaco are chiefly descendants of the American Tories, referred to above. Harbor Island has about 2,000 inhabitants, who are descendants of the buccaneers. Largest and most densely wooded are the Andros Islands.

From November to May the temperature ranges between 60° and 75° F.; in the summer months it varies from 75° to 85°. The climate, though subject to greater extremes of heat and cold than that of other groups in the West Indies, is agreeable and health-giving; and Nassau is a favorite resort for tourists in winter. The population (about 58,175) includes a large proportion of negroes, the natural increase among the descendants of former slaves being greater than among the descendants of the white settlers. There is little immigration. Good schools are maintained by the government and by the Church of England. The administration of the islands is conducted by a governor, an executive council, the representative assembly and a legislative council.

"Though the first discovered of the West Indies," wrote Ober, "the Bahamas were among the last, with a few exceptions, to become permanently settled, and even to-day little is known of the more remote islands, since very few of them are reached by steamers, connection between the northern and southern being kept up by sailing vessels only. As they are almost uniformly level, the highest elevation not exceeding 300 feet, they do not display that varied vegetation to be seen in the Greater and Lesser Antilles, where the mountain-sides are clothed with extensive tropical forests. Still, the Bahama flora embraces more than 100 native flowers and a variety of woods useful in the arts and *materia medica*, besides many delicious fruits known to dwellers in the tropical zone."

Steamers of the Ward Line (New York and Cuba Mail Steamship Company) leave New York every other Friday for Nassau, returning one week later; and during three months (about 1 January to 1 April), a steamer of the Peninsular and Occidental Steamship Company plies weekly between Miami, Fla. and Nassau, Bahamas.

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MARRION WILCOX.

**BAHAR,** bą-här', province and town in India. See BEHAR.

**BAHAR, or BARRE,** the name of certain weights used in several places in the East Indies. They have been distinguished as the *great bahar,* with which are weighed pepper, cloves, nutmegs, ginger, etc.; and the *little bahar,* used to weigh quicksilver, vermilion, ivory, silk, etc. But this weight varies much in different parts of the East, being in some places not much above 400 pounds, in others considerably over 500.

**BAHAWALPUR,** bą-hä'wąl-poor', India, town and capital of a state of the same name in the Punjab, two miles from the Sutlej. It is surrounded by a mud wall and contains the extensive palace of the Nawab, a vast square pile with towers at the corners. It has underground rooms, which afford a more comfortable temperature in the warm season than the upper rooms. Silk goods are manufactured, also turbans, chintzes and other cottons, and the immediate neighborhood is remarkably fertile, producing grain, sugar, indigo, tobacco, with an abundance of mangoes, oranges, apples and other fruits. Pop. (1911) 18,716. The state has an area of 17,285 square miles, of which 10,000 is desert, the only cultivated lands lying along the Indus and Sutlej. Cultivation largely depends upon irrigation, which has been considerably extended in recent times, with a great increase to the state revenue. The chief crops are cereals, cotton and indigo. Beasts of chase, such as tigers and boars, abound; domestic animals, camels, kine, buffaloes, goats and sheep are raised. The exports are cotton, sugar, indigo, hides, drugs, dyestuffs and wool. Bahawalpur is traversed by the Punjab Railway. For external commerce it is favorably placed. It stands at the junction of three routes from the east, southeast and south; while, toward the north, the Hindu merchants have dealings with Bokhara and even with Astrakhan. The political relations between the British government and the state are regulated by a treaty con-

cluded in 1838. No tribute is exacted from the Nawab. Pop. (1911) 780,641.

**BAHÍA,** Brazil, a state of that republic, bounded on the north by the states of Sergipe, Alagoas, Pernambuco and Piauhy, on the east by the Atlantic Ocean and Sergipe, on the south by Espíritu Santo and Minas Geraes, and on the west by Pernambuco, Piauhy, Goyaz and Minas Geraes. The larger part of the state is mountainous. The rivers form two systems — the first composed of tributaries to the São Francisco and the second of those streams making their way directly to the Atlantic Ocean. The most noteworthy single feature in the coast-line is the great bay "of all the saints," on the northeastern side of which was established, by Tomás de Souza in 1549 the capital of the state. See BAHÍA (the city), and BRAZIL.

**BAHÍA, bä-ē'ą or SÃO SALVADOR DA BAHÍA,** so named because it is situated on a large harbor or bay, ranks as the third in population and importance among the cities of Brazil. (See RIO DE JANEIRO). It lies about 740 miles north of Rio, in lat. 13° 1′ S., and long 38° 32′ W. Amerigo Vespucci visited this port on his voyage of exploration in 1503. Before 1763 Bahía was the capital of Brazil, and in the 16th century it was the scene of frequent conflicts between the Portuguese and the forces of other European nations. (See BRAZIL). At present it is the capital of the state of Bahía (area 164,643 square miles and pop. about 3,000,000), which has great natural resources in its mines and forests, as well as in fertile lands devoted largely to the cultivation of sugar-cane. The location of the city is picturesque, its upper portion being built on high ground several hundred feet above the sea-level. On the upper terraces stand churches, the cathedral, convents, a great theatre, the mint and the governor's palace. Below, bordering the port, which has a fine lighthouse and is defended by several forts, are docks and warehouses where the products of the country,— coffee, sugar, cotton, dye-woods, tobacco (excellent cigars), rum, hides, horns and tallow,— are collected, to be shipped to all parts of the world. Bahía has a public library, which was founded in 1811; its manufactures have received attention in recent years, and formerly it was the headquarters of the diamond trade, before the mines of South Africa and southern Brazil were developed. The author of 'Brazil and the Brazilians' (New York 1914), G. J. Bruce, says in regard to the bay — which, from the bar at the entrance to its head, is 43 miles long and about 40 broad at its widest part — that it is one of the safest harbors in the world, though the entrance looks dangerous and extremely forbidding. Berthing accommodation at the wharves is only provided for the smaller vessels. Steamers of large tonnage anchor out in the bay. A French company has works for the improvement of the port well advanced. Bahía is the starting point for several coasting lines, as well as for trading services to the São Francisco River regions. "The great feature of the city," he observes, "is the number of churches, 365, one for every day in the year." The city's population is somewhat more than 280,000, with an annual increase of nearly 6,000.

**BAHÍA BLANCA,** Argentina, an important seaport, as well as a commercial and administrative centre, in the province of Buenos Aires. The city is well built and is provided with a good water supply, and with electric light and tramway service. It is the headquarters of judicature for the southern part of the republic. (See ARGENTINA). The real harbor of Bahía Blanca is Puerto Belgrano, which has several miles of anchorage. Adjoining this are the national dockyards, known as Puerto Militar. Close by is the village of Punta Alta and the naval hospital. Adjacent towns are Puerto Ingeniero White (the terminus of the Great Southern Railway) and Puerto Galvan, terminus of the Buenos Aires and Pacific Railway. Combined populations of the whole group of towns, 76,000.

**BAHÍA HONDA,** bä-ē'ą ōn'dą, Cuba, seaport on the coast of the Gulf of Mexico, and lying on a small bay, bearing the same name, which affords one of the best harbors on the island. The town and bay are about 50 miles west of Havana, being commanded by a small fort. There are mines of coal and copper in the vicinity. A short distance to the south are the sulphur springs of Aguacate. Sugar and tobacco are cultivated to a considerable extent in the vicinity. Pop. Bahía Honda and Aguacate, about 1,300.

**BAHÑASA or BEHNESA.** See OXYRHYNCHUS.

**BAHR, Hermann,** Austrian author and journalist: b. Linz 1863. He studied in Vienna, Gratz, Czernowitz and Berlin, devoting special attention to philosophy, political economy and law. In 1890 he became associate editor of *Berliner Freie Bühne,* and later became associate editor and critic of the *Deutsche Zeitung.* In 1894 he began publication of *Die Zeit,* and was also editor of the *Neue Wiener Tagblatt* and the *Oesterreichische Volkszeitung.* He was appointed manager of the Berlin Deutsches Theater in 1906. His critical works include 'Zur Kritik der Moderne' (1890); 'Die Ueberwindung des Naturalismus' (1891); 'Neue Studien' (1891); 'Bildung' (1900); 'Secession' (1900); 'Premièren' (1902); and 'Dialog vom Tragischen' (1903). His plays are 'Die neuen Menschen' (1887); 'Die Mutter' (1891); 'Die häusliche Frau' (1893); 'Der Apostel' (1901); 'Der Krampus' (1902); 'Der Meister' (1904); 'Sanna' (1905); 'Die Andere' (1905); 'Das Konzert' (1909); 'Die Kinder' (1911); 'Das Prinzip' (1912). He has written the following novels: 'Die gute Schule' (1890); 'Dora' (1893); 'Neben der Liebe' (1893); and 'Stimmen des Bluts' (1909). Another work, 'Die Einsichtslosigkeit des Herrn Schäffle' (1886) is of a political nature; he published also a volume of 'Essays' (1912).

**BAHR, bär, Johann Christian Felix,** German philologist: b. Darmstadt, 13 June 1798; d. 29 Nov. 1872. Educated at Heidelberg Gymnasium and University, of which last he became ordinary professor of classical philology in 1823. His chief work is his 'History of Roman Literature' (1828; 4th ed., 1868–70), which is noted for its clearness and comprehensiveness. Three supplements to this work deal with the 'Christian Poets and Historians of Rome' (1836); the 'Christian-Roman Theology'

(1837); and the 'History of Roman Literature in the Carlovingian Period' (1840). His edition of 'Herodotus' (2d ed., 1855–61) is also noteworthy.

**BAHR,** an Arabic word signifying sea or large river; as in Bahr-el-Huleh, the Lake Merom in Palestine; Bahr-el-Abiad, the White Nile, Bahr-el-Azrek, the Blue Nile, which together unite at Khartum.

**BAHR-EL-GHAZAL,** bär'ĕl-gą-zäl' (Gazelle River), name of two rivers in central Africa: one flows from Lake Tchad through a desert region; the other is formed by the union of several streams near the Kongo Free State, and flows eastward through a very swampy region, and shortly after leaving Lake No unites with the Bahr-el-Jebel to form the White Nile. Its banks are apt to be very indefinite owing to inundations. In 1869 Schweinfurth explored the greater part of its basin. The head of steam navigation on the river is Meshra-er-Rek. The basin of these two rivers is a province of the same name. A settled government was established there on behalf of Egypt in 1878, but the Mahdist rebellion temporarily severed its connection with that country. Since the reconquest of the Egyptian Sudan by the British and Egyptian forces under Kitchener, however, the Bahr-el-Ghazal has been again brought under a settled administration. It is said to be rich in ivory, rubber and timber, and suited for cotton growing. The Ubangi district of the French Kongo lies to the west of the Bahr-el-Ghazal.

**BAHR YUSUF,** bär yoo'sŭf, or **BAHR EL YUSUF,** an artificial irrigation channel from the left bank of the Nile below Sint, to the Fayum, 270 miles long. According to Coptic traditions it was constructed during Joseph's administration.

**BAHRAICH,** bą-rīch', India, capital of Bahraich district, Faizabad division, in the united provinces of Agra and Oudh, and 65 miles northeast of Lucknow. The town is in a flourishing state; it is drained and lighted, and carries on a good local trade. It is situated on the junction line from Gonda to Basti, and began to flourish when the railway was built. It manufactures fireworks and native cloth. The chief edifice of interest is the shrine of Musand, a warrior and saint of the 11th century, which attracts both Hindu and Mohammedan pilgrims to the number of 150,000 annually. The American Methodist mission has a station and a school here. Pop. (1911) 26,907.

**BAHRAL,** bä'răl, or **BUHREL,** a wild sheep (*Ovis nahura*) of the high plains of Tibet, which resembles a goat in appearance, although it has no beard. The rams carry large flattened and nearly smooth horns, which curve outward and backward, but do not curl. The general color is brown, becoming gray in winter, while the abdomen and insides of the legs and tail are white; a stripe along the sides and on each side of the face, throat and the front of the legs are black, interrupted by white patches at the knees and above the hoofs. The females are plainer and have small horns. This animal, which is a favorite object of sport in Tibet, passes its whole time above the limit of forest growth, and clambers about the rocks in the manner of a goat rather than of a sheep. It is believed that these animals, which are often kept captive by the mountaineers, have influenced the Asiatic races of domestic sheep. Consult Lydekker, 'Royal Natural History' (Vol. II, London 1895).

**BAHRDT,** bärt, **Karl Friedrich,** German theologian: b. Bischofswerda, Saxony, 25 Aug. 1741; d. Halle, 23 April 1792; studied in Schulpforte and Leipzig, where he first showed his great talents. In 1766 he was appointed professor in the University of Leipzig. His works and his talents as a preacher met with acceptance, but in consequence of immoral conduct he was obliged to quit that city in 1768. From this time he led an unsettled life. He was successively professor of theology and preacher in Erfurt (where he was made doctor of theology), in Giessen, Switzerland, and in Dürkheim, but was obliged to leave each of these places on account of his severe attacks on the clergy and the heterodox views manifested in his writings and sermons, as well as on account of his irregular life. The Aulic Council declared him disqualified to preach or to publish unless he would revoke the religious principles advanced in his works. In 1779 he went to Halle, where he published his creed. It is thoroughly deistical, denying the miracles, and not insisting on the immortality of the soul. He lectured in Halle, but soon became involved in difficulties with the clergy; upon which he left the city, and established, in a neighboring vineyard, a tavern, where he had many customers, whose vitiated tastes and depraved habits he made no scruple of gratifying. Ultimately, in consequence of two works which he wrote, the patience of government was exhausted. He was brought to trial, condemned and confined in the fortress of Magdeburg. Here he wrote his life. At the end of a year, having regained his liberty, he again opened his tavern at Halle, where he died.

**BAHREIN,** ba-rān', or **AVAL ISLANDS,** a group of eight islands lying on the south side of the Persian Gulf, since 1867 under protection of British Indian government. The principal island, usually called Bahrein, is about 27 miles in length and 10 in breadth. It is in general very flat and low, a mere shoal hardly 20 feet above sea-level; though in the centre there are hills 400 feet high. The soil is not fertile except in some places, and is often cultivated by means of irrigation. Excellent dates are produced. A fine breed of donkeys is raised. Pearl-fishing is the most important industry, over 1,000 boats, each manned by from eight to 60 men, engaging in operations off the shore. There are thousands of conical mound-tombs in the interior. The inhabitants are a mixed race. The capital and commercial centre is Manameh or Manama; pop. 35,000. The island of Moharrek, separated from Bahrein by a strait two miles broad and only about three feet deep at ebb, is much smaller, but contains a town called also Moharrek, and has a population of 25,000. The islands are governed by a sheikh. The total population is estimated at 110,000.

**BAHURIM,** the place where Michal was parted from her husband, Phaltiel, as she was being taken back to David at Hebron. It is also the village in which Shimei lived and from which he came out to curse David when fleeing

from Jerus toward Jordan. In this village Jonathan and Ahimraz took refuge when carrying news to David from Jerus. There they hid themselves in a well, thus eluding the servants of Absalom who had been sent to capture them. Tradition identifies Bahurim with Almon, the modern Almet, about four miles northeast of Jerus and one mile from Amata near the southern boundary of Benjamin.

**BAIÆ,** bī'ē, Italy, a place where wealthy Romans had their summer homes, the favorite abode of the dancing-girls and the buffoons. It is now deserted, and interesting to the stranger only for the ruins of old baths, which are shown as temples, and for the remains of former palaces, visible beneath the waves of the sea. Baiæ owes its fame to its hot baths and its situation on a most charming bay, secured by surrounding hills from the violence of the winds. The life of the Romans there was particularly luxurious and dissolute. It has now entirely lost its ancient position of importance. Recently it has attained some importance as a naval station. It was situated to the west of Puteoli, the modern Pozzuoli, and about 12 miles from Naples. It is now known as Baja.

**BAIDYABATI,** bād'yą-bā'tē, a town of Bengal, situated on the river Hugli, about 15 miles from Calcutta, with an important market for jute and other produce.

**BAIF,** bä-ē, **Jean Antoine de,** French poet: b. 1532; d. 1589; one of the literary league known as the "Pléiade," and the chief advocate of its plan of reducing French poetry to the metres of the classic tongues; also a spelling reformer, in favor of the phonetic system. His most meritorious works were translations of Greek and Roman dramas.

**BAIKAL,** bī-käl', Russia-in-Asia, a lake of Siberia, 360 miles long from southwest to northeast, and from 20 to 53 in breadth, interspersed with islands. It has a shore line of 1,220 miles; long. 104° to 110° E.; lat. 51° 20′ to 55° 20′ N. It contains seals and many fish, particularly sturgeons and pikes. In the environs are several sulphurous springs, and in one part, near the mouth of the river Barguzin, it discharges a kind of pitch which the inhabitants purify. The water is sweet, transparent and appears at a distance green, like the sea. It receives the waters of the upper Angara, Selinga, Barguzin and other rivers; but the lower Angara is the only one by which it seems to discharge its waters. It is enclosed by rugged mountains, and the scenery is unusually magnificent. In summer the lake is navigated by steamboats, but it is frozen from November to April, and trade is carried on over the ice. It has several islands, the largest of which is Olkhon. Baikal forms an important link in the chain of communications between Russia and China and has several commercial ports, the most important being Lisvinichnoe, whence the Angara carries its waters to the Yenisei. The Trans-Siberian Railway passes around its southern end. Its sturgeon, salmon and freshwater seal fisheries are valuable, and large quantities of other fish are also taken. A peculiar fish, called the golomynka, which is almost one mass of fat, yielding train oil, was at one time caught in immense numbers, but is now rather scarce. Besides the Russians settled on the banks of the Selenga and Angara, the shores of Lake Baikal are also inhabited by tribes of the Buriats and Tunguses.

**BAIKIE,** bā'ki, **William Balfour,** English naturalist and traveler: b. Kirkwall, Orkney, 1825; d. Sierra Leone, 12 Dec. 1864. He studied medicine at Edinburgh, and after receiving his degree entered the royal navy as assistant surgeon. He served in the Mediterranean, was assistant surgeon at Haslar Hospital in 1851–54, and was then appointed surgeon and naturalist to the Niger expedition, which was about to start for the exploration of this river. The death of the captain of the exploring vessel, the *Pleiad,* left him in chief command, and he succeeded in reaching a point 250 miles higher up the river than had previously been attained. On a second expedition he was able to establish a settlement at the confluence of the Niger and Benue, and in a few years did much to spread civilization among the natives of the neighboring regions. Baikie translated the 'Book of Common Prayer' and the 'Psalms' into Haussa. He was author of 'Observations on the Haussa and Fufulde Languages,' and joint author with R. Heddle of 'Mammalia and Birds Observed on the Orkney Islands.'

**BAIKTASHI,** bīk-tä'shę. See DERVISH.

**BAIL,** in law, is the delivery of a person to another for keeping, and is generally used in reference to one arrested, or committed to prison, upon a criminal process, such person being said to be *bailed* when he is delivered to another (or is supposed to be so, but is simply set free from custody), who becomes his surety (to a greater or less amount according to the crime with which he is charged) for his appearance at court to take his trial. The person who thus becomes surety is said *to become bail,* and the amount itself is also called *bail.* Bail may generally be granted except in the case of treason. The word is not used as a plural. When the punishment by the law of the United States is death, bail can be taken only by the Supreme Court, or by a judge of a District Court of the United States. The proceedings attendant on giving bail are substantially the same in England and in all States of the United States. An application is made to the proper officer, and the bond or the names of the bail proposed filed in the proper office and notice is given to the opposite party, who must except within a limited time, or the bail justify and are approved. If exception is taken, notice is given, a hearing takes place, the bail must justify, and will then be approved unless the other party oppose successfully; in which case other bail must be added or substituted. A formal application is in many cases dispensed with, but a notification is given at the time of filing to the opposite party, and unless exceptions are made and notice given within a limited time, the bail justify and are approved. A bail piece at present generally signifies a warrant issued to the surety upon which he may arrest the person for whom bail has been taken. Straw bail signifies bail offered by persons not possessing the necessary qualifications, but are willing to swear that they do possess them. The statutes of the States usually require persons giving bail to be possessed of real estate or property not easily removable from the juris-

diction of the court. Consult Beach, 'Treatise on the Modern Practice in Equity' (Cincinnati 1894); Daniell, E. R., 'Pleading and Practice of the High Court of Chancery' (6th Amer. ed., 3 vols., Boston 1894); Stringer, F. A., 'A B C Guide to the Practice of the Supreme Court' (London 1903); Tidd, 'Practice of the Court of King's Bench' (4th Amer. ed., Philadelphia 1856).

**BAILÉN**, bi-lān', Spain, town of the province of Jaen, 20 miles north of Jaen. Galena and zinc blende are mined in the neighborhood. Here in July 1808 the French general, Dupont, surrendered 18,000 men to the Spaniards under Castaños. Pop. (1910) 8,334. Consult Galdo's «Bailén» in 'Episodios nacionales' (Vol. II, Madrid 1882).

**BAILEY, Florence Augusta Merriam,** American author: b. Locust Grove, N. Y., 8 Aug. 1863. She was graduated at Smith College in 1886, and began writing of bird life in the manner of John Burroughs. Her published works include 'Birds Through an Opera Glass' (1889); 'My Summer in a Mormon Village' (1895); 'A-Birding on a Bronco' (1896); 'Birds of Village and Field' (1898); 'Handbook of Birds of Western United States' (1902).

**BAILEY, Gamaliel,** American journalist: b. Mount Holly, N. J., 3 Dec. 1807; d. 5 June 1859. He was graduated at the Jefferson Medical College, Philadelphia, in 1827, and for several months, after 1829, was editor of the *Methodist Protestant* at Baltimore; with J. G. Birney he founded the anti-slavery journal, the Cincinnati *Philanthropist* (1836), the office of which was destroyed by a mob, though it coninued to be published till 1847; after 1843 was also editor of a daily paper, *The Herald*. He established the well-known anti-slavery newspaper, the Washington *National Era* (1847), which reached a wide circulation, exerted a powerful influence and was one of the most important organs of the Abolition movement. It numbered among its regular contributors Mrs. Stowe, Whittier, Amos A. Phelps and Mrs. Southworth, and in it in 1852 the famous novel, 'Uncle Tom's Cabin,' first appeared. Consult the article «A Pioneer Editor» in *The Atlantic Monthly* (Vol. XVII, Boston 1866).

**BAILEY, Jacob Whitman,** American scientist: b. Auburn, Mass., 29 April 1811; d. 26 Feb. 1857; was graduated at the United States Military Academy in 1832; and from 1834 till his death was professor of chemistry, mineralogy and geology at the Military Academy. He was the inventor of the Bailey indicator and of many improvements in the microscope, in the use of which he achieved high distinction; and he is regarded as the pioneer in microscopic investigation. He was president of the American Association for the Advancement of Science in 1857; and was author of numerous papers on the results of his researches, the most important of which was a volume of 'Microscopical Sketches,' containing over 3,000 original figures. He made a large collection of algæ and of microscopic objects, which he bequeathed to the Boston Society of Natural History. A biographical sketch appeared in the *American Journal of Science and Arts* (Vol. XXV, New Haven 1847).

**BAILEY, James Montgomery,** American humorist: b. Albany, N. Y., 25 Sept. 1841; d. 4 March 1894. He received a common-school education, and learned the trade of carpenter, which he practised at Danbury, Conn., in 1860–61, writing occasional pieces for the newspapers. He served in the 17th Connecticut regiment during the Civil War; returned to Danbury, founded the Danbury *News* in 1870, for which he wrote numerous humorous sketches of commonplace happenings. He gained a national reputation as the «Danbury News Man» and made his paper known throughout the country. He wrote 'Life in Danbury' (Boston 1873); 'Danbury News Man's Almanac' (1873); 'They All Do It' (1877); 'The Danbury Boom' (1880); 'England from a Back Window' (1878); 'Mr. Phillips's Goneness' (1879), etc.

**BAILEY, Joseph,** American military officer: b. Salem, Ohio, 28 April 1827; d. 21 March 1867; entered the Union army as a private in 1861, and signally distinguished himself in the Red River campaign under Gen. N. P. Banks, in 1864 by building a dam and deepening the water in the channel, which enabled Admiral Porter's Mississippi flotilla to pass the Red River rapids in safety and to escape the perilous situation. For this engineering feat, Bailey, who before entering the army was a plain farmer, was brevetted brigadier-general, promoted colonel, voted the thanks of Congress, and presented by the officers of the fleet with a sword and a purse of $3,000. Subsequently, he was promoted to full brigadier-general, and was engaged on engineering duty till his resignation 7 July 1865. He was killed, while acting as sheriff, by two desperadoes in Missouri.

**BAILEY, Joseph Weldon,** American senator for Texas: b. Copiath County, Miss., 6 Oct. 1863. He studied for the legal profession, was graduated as a lawyer in 1883, and, entering politics, in 1884 served as a district elector on the Cleveland and Hendricks ticket. The following year he removed to Gainesville, Tex., and in 1888 served as elector for the State at large on the Democratic ticket. He was elected to the 52d, 53d, 54th, 55th and 56th Congresses, and was the Democratic nominee for speaker of the House of Representatives on the organization of the 56th Congress, 15 March 1897. He was chosen to succeed the Hon. Horace Chilton, United States senator for Texas, 23 Jan. 1901, and was re-elected 22 Jan. 1907. He resigned his seat in the Senate 3 Jan. 1913 and resumed the practice of law.

**BAILEY, Liberty Hyde,** American horticulturist: b. South Haven, Mich., 15 March 1858; was graduated at the Michigan Agricultural College in 1882; M.S., 1886; was assistant to Dr. Asa Gray at Harvard University in 1882–83; professor of horticulture in Cornell University, 1888–1903; in 1903 was appointed director of the College of Agriculture at Cornell, and retired 1913, with the degree of LL.D. from the University of Wisconsin and Alfred University. He was an associate editor of the revised edition of Johnson's 'Universal Cyclopedia' (1892–96); editor of 'American Garden-

ing'; editor of 'Cyclopedia of American Horticulture' (1900–02); 'Cyclopedia of American Agriculture' (1907–09); 'Standard Cyclopedia of Horticulture' (1914–16); also editor of the 'Rural Science Series,' the 'Rural Manual Series,' the 'Rural Text Book Series'; and others. He has published a number of technical and also popular works, including 'Annals of Horticulture'; 'Evolution of Our Native Fruits'; 'Survival of the Unlike'; 'Principles of Fruit Growing'; 'Nursery-Book'; 'Pruning-Book'; Forcing-Book'; 'Principles of Agriculture'; 'Principles of Vegetable-Farming'; 'Plant-Breeding'; several botanies, 'Manual of Gardening'; 'Farm and Garden Rule-Book'; 'The Training of Farmers'; 'The State and the Farmer'; 'The Country Life Movement'; 'Outlook to Nature'; 'Nature Study Idea'; 'The Holy Earth'; 'York State Problems' (Vols. I and II) and others. He was Vietchian Medalist of the Royal Society (London); fellow American Academy of Arts and Sciences; member American Philosophical Society; chairman of Roosevelt's Commission on Country Life, 1908.

**BAILEY, Loring Woart,** American chemist and geologist: b. West Point, N. Y., 28 Sept. 1839. He graduated at Harvard in 1859, and in 1861 was appointed professor of chemistry and natural science in the University of New Brunswick, Fredericton, N. B., retiring under Carnegie Foundation in 1906. He has also been connected with the geological survey of Canada. Besides his official reports he has published 'New Species of Microscopical Organism from the Pará River, South America' (1861); 'Mines and Minerals of New Brunswick' (1864); 'Geology of Southern New Brunswick' (1865); 'Elementary Natural History' (1887).

**BAILEY, Nathaniel** (or NATHAN), English lexicographer: d. 1742. He was the author of an English dictionary, the best before that of Dr. Johnson. The first edition appeared in 1721 under the title of 'An Universal Etymological English Dictionary,' by N. Bailey; and it was soon republished in an enlarged form. Altogether some 30 editions of it appeared up to 1802. Dr. Johnson made use of an interleaved copy of it when drawing up his own dictionary. Bailey also published a spelling-book; 'All the Familiar Colloquies of Erasmus, Translated'; 'The Antiquities of London and Westminster'; 'Dictionarium Domesticum,' etc.

**BAILEY, Philip James,** English poet: b. Nottingham, 22 April 1816; d. 6 Sept. 1902. He was educated first in his native city and afterward at Glasgow University; was called to the bar, but never practised. His best known poem, 'Festus,' was first published in 1839, and passed through a very large number of editions, both in Great Britain and the United States. He is author of a few other poems and of one prose work; among the former are 'The Age' (1858), a satire, and 'The Angel World' (1850); 'The Mystic' (1855) and 'The Universal Hymn,' now incorporated with 'Festus.'

**BAILEY, Samuel,** English banker and writer on political and mental philosophy: b. Sheffield 1791; d. 18 Jan. 1870. His first work was a volume of 'Essays on the Formation and Publication of Opinions' (1821), in which he ably defended the proposition that a man's opinions are independent of his will. His 'Essays on the Pursuit of Truth and on the Progress of Knowledge' (1829) are only less valuable. His many controversial books on questions of political economy are already almost forgotten, though these, as well as his pamphlets and treatises on political representation, primogeniture and the like, are characterized alike by terse exposition and vigorous style. Not less interesting are his 'Review of Berkeley's Theory of Vision' (1842); 'Theory of Reasoning' (1851); and 'Letters on the Philosophy of the Human Mind' (1855–63). The third series of the last contains an able defense of utiltarianism, in which the author avows himself a thorough determinist.

**BAILEY, Solon Irving,** American astronomer: b. Lisbon, N. H., 29 Dec. 1854. He was graduated from Boston University, 1881; and Harvard (A.M.), 1887. In 1889 he was sent to Peru to determine the best location for a southern station of the Harvard Observatory. Arequipa was selected, an observatory built, and as associate professor of astronomy Professor Bailey has had charge of the work there for 10 years. In 1893 he established a meteorological station on the summit of El Misti, by far the highest scientific station in the world, at an elevation of 19,000 feet. In 1913 he became Phillips professor of astronomy at the Peruvian station and in 1908 he visited south Africa where he conducted astronomical observations on an elevated plateau in the northern part of the Cape Colony. His scientific writings have been issued in the 'Annals of Harvard College Observatory.'

**BAILEY, Theodorus,** American naval officer: b. Chateauguay, N. Y., 12 April 1805; d. 10 Feb. 1877; entered the navy in 1818; served on the western coast of Mexico during the Mexican War; commanded the frigate *Colorado*, of the western Gulf blocking squadron, in 1861–62; and in the last year commanded the right column of Admiral Farragut's squadron in the passage of Forts Saint Philip and Jackson and led the fleet at the capture of the Chalmette batteries and the city of New Orleans. In 1862–65 he commanded the east Gulf blockading squadron. He was commissioned rear-admiral and retired in 1866.

**BAILEY, Vernon,** American scientist: b. Manchester, Mich., 21 June 1863; received a university education and is chief field naturalist of the United States Biological Survey. Among his publications are 'Spermophiles of Mississippi Valley' (1893); 'Revisions of Voles of the Genus *Evotomys* and Genus *Microtus*'; 'Cotton Rats of the Genus *Sigmodon*'; 'Pocket Gophers of the Genus *Thowomys*' (1915); 'Biological Survey of Texas'; 'Life and Crop Zones of New Mexico'; 'Mammals of District of Columbia,' etc., and numerous other papers on natural history subjects.

**BAILEY, William Whitman,** American botanist: b. West Point, N. Y., 22 Feb. 1843; d. Providence, R. I., 20 Feb. 1914. He was educated at Brown and Harvard universities, having been a pupil of Prof. Asa Gray. In 1867 he was bontanist of the United States Geological Survey of the 40th parallel. He was instructor in botany at Brown Uni-

versity 1877–81; professor 1881–1906; and from 1906 till his death, emeritus professor. He published 'Botanical Collector's Handbook' (1881); 'Among Rhode Island Wild Flowers' (1885); 'New England Wild Flowers' (1897); 'Botanizing' (1899); 'Poems' (1910); and was a member of many scientific societies.

**BAILEY, Willis Joshua,** American statesman: b. Carroll County, Ill., 12 Oct. 1854. He was graduated at the University of Illinois, 1879, and received the degree of LL.D. from this University in 1904. From 1879 to 1888 he was engaged in farming and stock-raising in Nemaha County, Kan. He was elected in the latter year to the Kansas house of representatives; was president of the Republican State League 1893; became a member of the Kansas State Board of Agriculture in 1895; was elected member of the 56th Congress (1899–1901); governor of Kansas 1903–05; is vice-president and manager of the Exchange National Bank of Atchison, Kan., since 1 March 1907.

**BAILIFF,** a name which was introduced into England with William I and came to be applied to various officials representing or acting for the King. He is essentially a person entrusted by a superior with power of superintendence. In the United States the word bailiff has no precise meaning. The term is most frequently used to denote a court officer whose duty it is to take charge of juries and wait upon the court. In England, an officer appointed for the administration of justice in a certain bailiwick or district. The sheriff is the King's bailiff, whose business it is to preserve the rights of the King within his "bailiwick" or county. (1) The governor of a castle belonging to the King. (2) In the Channel Islands the first civil officer on each island. (3) A sheriff's officer. Bailiffs are either bailiffs of hundreds or special bailiffs. (a) Bailiffs of hundreds are officers appointed by the sheriff over the districts so called, to collect fines, summon juries, to attend the judges and justices at the assizes and quarter sessions and to execute writs and process. (b) Special bailiffs are men appointed for their adroitness and dexterity in hunting and seizing persons liable to arrest. They assist the bailiffs of hundreds in important work for which the latter have no natural aptitude or acquired skill. Special bailiffs being compelled to enter into an obligation for the proper discharge of their duty are sometimes called bound bailiffs, a term which the common people have corrupted into a more homely appellation. Consult Blackstone's 'Commentaries,' Vol. I, chap. 9.

**BAILIWICK,** the jurisdiction of a bailiff, from *bailie* and *wick* (*vicus*), a town or village. In the United States it generally refers to a county, or in a jocular way is applied to any territory or place in which a person has authority.

**BAILLARGEON,** bā'yär'zhôn', **Charles François,** Canadian prelate: b. Ile aux Grues, Que., 1798; d. 1870. He was consecrated bishop of Tloa and coadjutor to Archbishop Turgeon of Quebec, 23 Feb. 1851; was administrator of the diocese in 1855; and archbishop in 1867.

**BAILLARGER,** bą'yär-zhā', **Jules Gabriel,** French physician: b. 1809; d. 1891. He made a specialty of mental and nervous diseases and in 1843 joined with Longet and Cerise to establish a review especially devoted to these subjects, known as the 'Annales Médico-psychologiques du Système Nerveux.' In 1849 he received the medal of the Legion of Honor for his valuable services during the cholera outbreak of that year; in 1842 he received a prize from the Academy of Music for his essay on 'Des Hallucinations.'

**BAILLET,** bą-yā', **Adrien,** French writer: b. Neuville 1649; d. 21 Jan. 1706. He was ordained priest in 1675 and his love for learning was so intense that after discharging for five years the duties of a parish priest, he accepted the position of librarian to Lamoignon, president of Parliament. His first publication was entitled 'Judgments of the Learned upon the Principal Works of Authors,' a book of criticisms which taught better rules than it illustrated. He also produced a book on 'Devotion to the Holy Virgin'; 'The Lives of the Saints' (3 vols., 1701); 'Life of Descartes' (2 vols., 1691); 'Des satires personelles' (2 vols., 1689).

**BAILLEUL,** bą-yėl', France, town in the department of the Nord, near the Belgian frontier, about 19 miles northwest of Lille. It has manufactures of woolen and cotton stuffs, lace, leather, etc. Pop. (1911) 13,251. A village of the same name in the department of Orne gave its name to the Baliol family.

**BAILLIE, Lady Grizel,** Scottish poet: b. Redbraes Castle, 25 Dec. 1665; d. 6 Dec. 1746; daughter of the 1st earl of Marchmont (Sir Patrick Hume); married George Baillie in 1692; published a large number of songs in Ramsay's 'Miscellany' and other collections; the best known is 'Were na My Heart Licht, I wad Dee.'

**BAILLIE, Harry,** the proprietor of the Tabard Inn, who acts as chairman of the meeting of the pilgrims in Chaucer's 'Canterbury Tales.'

**BAILLIE, Joanna,** Scottish author: b. Bothwell, near Glasgow, 11 Sept. 1762; d. 23 Feb. 1851. She removed in early life to London, where in 1798 she published the first volume of her well-known 'Plays on the Passions,' in which she attempted to delineate the stronger passions by making each passion the subject of a tragedy and a comedy. These plays were not well adapted for the stage, but gave Miss Baillie a very extended reputation. Her first volume was followed by a second in 1802, a third (of miscellaneous plays) in 1804, and a fourth in 1812. Other plays appeared in 1836 and a complete edition of her whole dramatic works in 1850. The only plays performed on the stage were a tragedy entitled the 'Family Legend,' which was brought out at the Edinburgh Theatre in 1810 under the patronage of Sir Walter Scott and had a run of 14 nights, and one of the plays on the passions entitled 'De Montfort,' which was brought out by John Kemble and played for 11 nights, though an attempt to revive it at a later period failed. Miss Baillie also wrote songs and miscellaneous poems. All her productions are full of genius. The language is simple and forcible, the female portraits are particularly beautiful and great knowledge of the human heart is displayed in the delinea-

tions of character. She was an intimate friend of Sir Walter Scott, who greatly admired her writings, and her home was frequented by many of the prominent authors of the day.

**BAILLIE, Matthew,** Scottish physician and anatomist: b. Lanarkshire, Scotland, 27 Oct. 1761; d. 23 Sept. 1823; brother of Joanna Baillie; educated at the universities of Glasgow and Oxford. While at Oxford he began his medical and anatomical studies under his maternal uncles, the celebrated William and John Hunter, then lecturers in London. In 1787 he was elected one of the physicians of Saint George's Hospital and held that office for 13 years. In 1789 he took the degree of M.D. and was admitted a fellow of the Royal College of Physicians. He very soon stood at the head of his profession and in 1810 was made physician to the King by George III. He published 'The Morbid Anatomy of Some of the Most Important Parts of the Human Body'; wrote eleven essays in the 'Transactions' of the Society for the Promotion of Medical and Chirurgical Knowledge, and seven papers in the 'Medical Transactions,' published by the London College of Physicians.

**BAILLIE, Robert,** Scottish Presbyterian clergyman: b. Glasgow 1599; d. 1662; educated at the University of Glasgow. In 1638 he sat in that famous general assembly which met in Glasgow to protest against the thrusting of Episcopacy on an unwilling people. In 1649 he was chosen by the Church to proceed to Holland and to invite Charles II to accept the covenant and crown of Scotland. He performed his mission skilfully; and, after the Restoration, through Lauderdale's influence, he was made principal of Glasgow University.

**BAILLIE, Robert, of Jerviswood,** Scottish patriot of the reign of Charles II: d. 24 Dec. 1684. He first came into notice in 1676 through his rescue of a brother-in-law, the Rev. Mr. Kirkton, from the clutches of Archbishop Sharp's principal informer. In 1683 he took a prominent part in a scheme of emigration to South Carolina, as he saw no other refuge from the degrading tyranny of the government. About the same time he corresponded with Monmouth's supporters in London, Russell and Sidney and subsequently repaired there to concert measures for securing adequate reforms. On the discovery of the Ryehouse plot, he was arrested and sent to Scotland. Accused of conspiring against the King's life and of hostility to monarchical government, he was tried at Edinburgh and condemned to death upon evidence at once insignificant and illegal. The sentence was carried into execution on the very day that it was passed.

**BAILLOT,** bą-yō', **Pierre Marie François de Sales,** French violinist: b. Passy 1771; d. Paris, 15 Sept. 1842. He was a professor in the conservatory at Paris; traveled extensively in Russia, Belgium, Holland and England. He was the last of the old classical Paris school of violin players and unexcelled as an interpreter of chamber music.

**BAILLY,** bą-yę', **Antoine Nicolas,** French architect: b. 6 June 1810; d. 1 Jan. 1892; was appointed to an office under the city government of Paris in 1834; in 1844 was made architect to the French government and received the cross of the Legion of Honor in 1853. He was first president of the Société des Artistes Françaises. The Lycée Saint Louis, Molière Fountain and the Tribunal of Commerce in Paris and the reconstruction of the Cathedral of Digne are examples of his work.

**BAILLY, Jean Sylvain,** French astronomer, statesman and historian: b. Paris, 15 Sept. 1736; d. 12 Nov. 1793. Leaving the art of painting, to which he was educated, he pursued poetry and *belles-lettres* until his acquaintance with Lacaille, when he turned his attention to astronomy and calculated the orbit of the comet of 1759. In 1763 he was admitted to the Academy of Sciences; in 1766 he published his treatise on Jupiter's satellites, which also contains a history of that section of astronomy. In 1771 he published a valuable and interesting treatise on the light of the satellites. Later he wrote also a history of astronomy. In 1784 he was chosen secretary of the Academy, also admitted to the French Academy and the next year admitted to the Academy of Inscriptions; a rare thing for one person to belong to the three academies. He espoused the Democratic cause in the Revolution, was elected from Paris, in 1789, 1st deputy of the *tiers état,* and was chosen president of the assembly. In July 1789 he was mayor of Paris and discharged his duties during 26 months of a most trying and dangerous period with great firmness and wisdom. Losing his popularity by repressing rioting and other crimes and defending the Queen, he gave up public life and lived in retirement till seized by the Jacobins and brought to Paris, where he was condemned as a conspirator and executed. Several posthumous works of his have appeared; the most noted are an 'Essay on the Origin of Fables and Ancient Religions,' and his 'Memoirs of an Eye-witness from April to October 1789.' Consult his biography by Arago (1854) and Nourrisson, 'Trois Révolutionaires; Turgot, Necker, Bailly' (1885).

**BAILMENT,** in law, is the delivery of a chattel or thing to another to keep, either for the use of the bailor or person delivering, or for that of the bailee or person to whom it is delivered. A bailment always supposes the subject to be delivered only for a limited time, at the expiration of which it must be redelivered to the bailor; and the material inquiries in cases of bailment relate to the degree of responsibility of the bailee in regard to the safe-keeping and redelivery of the subject of the bailment. This responsibility will depend, in some degree, upon the contract on which the bailment is made. If a thing is delivered to the bailee to keep without any advantage or use to himself, or any compensation, but merely for the benefit of the bailor, he is answerable only for gross negligence; but if the bailment is for the mutual benefit of both parties, the thing must be kept with the ordinary and usual care which a prudent man takes of his own goods; but if it be delivered for the benefit of the bailee only, he must exercise strict care in keeping it, and will be answerable for slight negligence. A special agreement is made in many cases of borrowing or hiring, specifying the risks assumed by the borrower or hirer; and in such case his obligations will be determined by his stipulations. So

important is possession at the common law that the ownership of a bailed article is deemed to be divided between the bailor and the bailee, the latter being said to have the "special property" in the bailed article, the former the "general property." At common law it is the bailee and not the owner who is entitled to maintain the ordinary actions, such as trespass, trover and replevin, for an interference with the bailed article while in his possession, but in case of a permanent injury to it, the bailor may institute an action to protect his general property interest therein. Innkeepers and common carriers are at common law absolutely liable for the safe return of goods entrusted to them, but modifications by statute now permit the innkeeper, by providing a safe deposit and giving proper notice, to limit his liability to that of an ordinary bailee, while common carriers, by proper notice or by reasonable special contract, may only be held responsible for losses and injuries resulting from their own or their servants' negligence. In New York losses resulting from the carrier's own negligence are not to be redeemed by him, and he is only liable for wilful wrongdoing. The contract of a carrier of passengers is not a contract of bailment. Consult Beal, 'Law of Bailments' (London 1900); Schouler, 'Treatise on the Law of Bailments' (3d ed., Boston 1897); Story, 'Commentaries on the Law of Bailments' (9th ed., Boston 1878).

**BAILY, Edward Hodges,** English sculptor: b. Bristol, 10 March 1788; d. 22 May 1867. He was brought up with a view to a mercantile career, but ere long gained considerable success as a modeler in wax. He became a pupil of Flaxman in 1807, gained the Academy gold medal in 1811 for his 'Hercules Restoring Alcestis to Admetus,' and was elected a member of the Royal Academy in 1821. His principal works are 'Eve at the Fountain'; 'Eve Listening to the Voice'; 'Maternal Affection'; 'Girl Preparing for the Bath'; 'The Graces'; etc. The bas-reliefs on the south side of the Marble Arch, Hyde Park; the statue of Nelson on the Trafalgar Square monument, and many statues of distinguished men, were executed by him.

**BAILY, Francis,** English astronomer: b. Newbury, in Berkshire, 1774; d. 1844. Entered a London house of business, and traveled two years in America, the literary outcome of which was his curious 'Journal of a Town in the Unsettled Parts of North America in 1796 and 1797,' published in 1856; then settled in London as a stockbroker and published several works on the doctrine of life annuities and insurance. On retiring from business with an ample fortune in 1825 he turned his attention particularly to astronomy, and became one of the founders of the Astronomical Society; improved the nautical almanac, and investigated and described the phenomenon called Baily's beads (q.v.). Besides many astronomical papers he wrote a 'Life of Flamsteed.'

**BAILY'S BEADS,** a phenomenon attending eclipses of the sun, the unobscured edge of which appears discontinuous and broken immediately before and after the moment of complete obscuration. It is classed as an effect of irradiation and defraction.

**BAIN, Alexander,** Scottish electrician: b. Watten, Caithness, 1810; d. 1877. After serving an apprenticeship to a clockmaker in Wick, he went to London, and began a series of electrical experiments in 1837; invented electric fire-alarm and sounding-apparatus, and the automatic chemical telegraph, by which high speed telegraphy was for the first time made possible.

**BAINBRIDGE, John,** English astronomer and mathematician: b. Ashby-de-la-Zouch, in Leicestershire, 1582; d. 1643. He studied at Cambridge; set up a grammer school in his native place, and at the same time practised physic, devoting his leisure to the science of mathematics. His 'Description of the Comet of 1618' was the means of introducing him to Sir Henry Savile, who had founded an astronomical lecture at Oxford, and who in 1619 appointed Dr. Bainbridge to the professorship. He died while engaged in publishing corrected editions of the works of the ancient astronomers, an undertaking which was one of the duties enjoined on him as Savilian professor. His other published works are 'Procli Sphæra et Ptolemæi de Hypothesibus Planetarum,' together with 'Ptolemæi Canon Regnorum' (1620); and 'Canicularia: A Treatise on the Dog Star' (1648).

**BAINBRIDGE, William,** American naval officer: b. Princeton, N. J., 7 May 1774; d. 28 July 1833. He entered the merchant service at the age of 15 and became captain within four years. In 1796, while commander of the *Hope* he defeated an English schooner, whose captain had tried to impress some of the *Hope's* crew. In 1798, when the United States navy was organized, he was made lieutenant and given command of the schooner *Retaliation*. He was captured by the French and kept a prisoner for several months, and on his return to the United States made a report which led to the passage of the Retaliation Act of 1798 against French subjects captured on the high seas; was placed in command of the *Norfolk* and subsequently appointed to the command of the frigate *George Washington*, which was ordered to take tribute to Algiers. The Dey of Algiers demanded that Bainbridge convey an Algerian ambassador and valuable presents to Constantinople, and Bainbridge was forced to comply to avoid war and the destruction of the unprotected trade in the Mediterranean. The United States government fully approved the course he had pursued. He was soon employed in the Mediterranean again in command of the frigate *Essex*, and afterward upon the declaration of war against the United States by Tripoli, was appointed to the frigate *Philadelphia*, one of the vessels of the squadron sent against that power, under the command of Commodore Edward Preble. On 26 Aug. 1803, he captured the Moorish frigate *Meshboa*, but was himself taken prisoner with his officers and men in October of that year. While pursuing one of the enemy's vessels, the *Philadelphia* ran aground; every possible effort was made to float her, but she was soon surrounded by gunboats from Tripoli, about three miles distant, and Captain Bainbridge was compelled to surrender, having first taken such measures as it was thought would ensure the final loss of the ship. He remained with his associate prisoners in Tripoli until the conclusion of peace, which took place 3 June 1805. On his return a court of inquiry for the loss

of the *Philadelphia* gave him honorable acquittal. His next service afloat was in the War of 1812, when he was appointed, with the rank of commodore, to the command of a squadron, consisting of the *Constitution* (his flagship), *Essex* and *Hornet*, and sailed from Boston 25 October for a cruise. On 26 December off San Salvador, while separated from the rest of his squadron, it was his good fortune to fall in with and capture H. B. M. frigate *Java*. In 1815 he was appointed to the command of a squadron of 20 sail, intended to act against Algiers, then at war with us, but peace was concluded before it reached the Mediterranean. In 1819 he again commanded in the Mediterranean, and returned from this, his last service afloat, in 1821. From this time until his death he was almost constantly employed in important shore service, commanding at different times the navy yards at Boston and Philadelphia, and holding the position of president of the board of navy commissioners from 1832 to 1833. As an officer he had few superiors. Though ardent in his temperament, he was cool in danger, and always had the confidence of those under his command. His system of discipline, though rigid, was always consistent and just, and he was remarkable for paying the greatest attention to the formation of his young officers. Consult Cooper, 'Lives of Distinguished American Naval Officers' (2 vols., Auburn 1846); Harris, 'Life of Bainbridge' (Philadelphia 1837).

**BAINBRIDGE**, Ga., town and county-seat of Decatur County, situated on the Flint River, 236 miles west of Savannah on the Atlantic Coast Line and the Georgia, Florida and Alabama railroads. It is in a cotton and tobacco region, and has various manufactures, turpentine distilleries, lumber mills, etc. It is the seat of the Georgia Southern Military College. Pop. 4,217.

**BAINBRIDGE**, N. Y., village of Chenango County, 35 miles northeast of Binghamton, on the Delaware and Hudson Railroad, and on the Susquehanna. It contains a town hall and a high school, and has a silk mill, condensed milk factory, sugar of milk factory and cheese and cream separator factories. The First National Bank has a capital of $50,000, with surplus and profits amounting to $70,000. The village's taxable property is valued at $465,362. The village officers are elected annually. The administration expenses are from $5,000 to $6,000 annually, and are raised by a direct tax. Pop. 1,200.

**BAINES, Edward**, English publicist: b. Walton-le-Dale 1774; d. 1848. He became a printer's apprentice at Preston and later at Leeds. In 1801 he became proprietor of the Leeds *Mercury*, which he made one of the greatest of the provincial journals. He was the confidant and adviser of many parliamentary leaders and in 1834 succeeded Macaulay as member for Leeds. He remained in Parliament until 1841. He was an independent Liberal, advocating the separation of Church and state, the reform of factory laws, and opposing governmental interference in education. He wrote 'History of the County Palatine and Duchy of Lancaster' and 'History of the Reign of George III' (4 vols., 1823). Consult his 'Life' by his son (1861).

**BAINES, Sir Edward**, English politician: b. 1800; d. 1890. He was the son of Edward Baines (q.v.); was elected to Parliament in 1859, and, like his father, championed various reforms. He opposed Church tests in the universities, advocated the disestablishment of the Irish Church, and in 1861 and 1864 presented bills for extending the electoral franchise. He published a 'Life' of his father (1861) and a 'History of the Cotton Manufacture in Great Britain' (1835), beside other works.

**BAINES, Thomas**, English artist and explorer; b. King's Lynn, Norfolk, 1822; d. Durban, Natal, 1875. In 1842 he went to Cape Colony, whence he accompanied the British army in the Kaffir War (1848–51) as artist. He afterward went with Gregory's party to explore northwest Australia; with Livingston to the Zambesi; with Chapman's expedition to the Victoria Falls; and finally headed an expedition to the gold fields of Tati. Everywhere he made large numbers of sketches. A handsome folio of colored lithographs from his drawings at Victoria Falls was published in 1865. His last journey among the Kaffirs was very carefully mapped out and sketched. His writings are 'Explorations in Southwestern Africa' (1864); 'The Gold Regions of Southeastern Africa' (1877).

**BAINI**, bą-ē'nę, **Giuseppe**, Italian musician: b. Rome 1775; d. 1844. He was director of the Pope's choir from 1814 till his death. The severe gravity and profound science of his compositions contrasted strongly with the careless style and shallow dilettanteism of most of his compeers; but it was by his historical researches that Baini secured for himself a prominent place in musical literature. His 'Miserere' for 10 voices was the only work of the 19th century deemed worthy of performance in the Sistine Chapel. His principal works and that on which his fame chiefly rests is his life of Palestrina, 'Memorie storico-critiche della vita e delle opere di Giovanni Pierluigi da Palestrina' (2 vols., Rome 1828; German trans. by Kandler 1834).

**BAIRAKTAR**, bī'rąk-tär' (more correctly Bairak-dar), signifying "standard-bearer," the title of the Grand Vizier Mustapha: b. 1755; d. 15 Nov. 1808. When he was pasha of Rustchuk in 1806 he fought with some success against the Russians, and after the revolt of the Janissaries in 1807, by which Selim III was deposed from the throne in favor of Mustapha IV, he marched his troops to Constantinople, deposed Mustapha IV, and proclaimed the brother of this prince, Mahmoud II, Sultan on 28 July 1808. Bairaktar was now appointed grand vizier, and endeavored to carry out Selim's reforms, and to strengthen the regular army. His chief object was the annihilation of the Janissaries; but they rebelled, and, with the support of the fleet, attacked the seraglio 15 Nov. 1808, and demanded the restoration of Mustapha IV. Bairaktar defended himself bravely; but when he saw that flames threatened to destroy the palace, he strangled Mustapha, threw his head to the besiegers, and killed himself.

**BAIRAM**, or **BEIRAM**, bī'ram, two Mohammedan feasts, one immediately following the Ramazan or Lent (a month of fasting), and

lasting three days. This feast begins, like the Ramazan, as soon as the new moon is announced by the persons appointed for that purpose, and during the course of 32 years makes a complete circuit of all the months and seasons, since the Turks reckon by lunar years. It is the custom at this feast for inferiors to make presents to their superiors, a custom formerly extended even to the Europeans. Seventy days after this first or lesser Bairam begins a second — the greater (Kurbán) Bairam. They are the two most important feasts whose celebration is prescribed by the Mohammedan religion.

**BAIRD, Absalom,** American soldier: b. Washington, Pa., 20 Aug. 1824; d. near Relay, Md., 14 June 1905. He was graduated from the United States Military Academy and assigned to the artillery in 1849. He was commissioned brigadier-general of volunteers 1862, and brevetted major-general four months later for his conduct in the Atlanta campaign. On 13 March 1865 he was brevetted major-general, United States army, for meritorious services in the field during the war. He was continuously in the field from the Manassas campaign, in 1861, till after the surrender of General Johnston's army in 1865. He was staff inspector-general from 1885 to 1888 when he retired.

**BAIRD, Andrew Wilson,** English military engineer: b. Aberdeen, Scotland, 26 April 1842; d. 2 April 1908. He became a colonel in the Royal Engineers Corps in 1893; was special assistant engineer of the harbor defenses of Bombay in 1864; assistant field engineer of the Abyssinian expedition in 1868, and for nearly 20 years thereafter was employed on the great trigonometrical survey of India. His services were rewarded with numerous official commendations, medals and decorations; and he has published a number of important works on his labors in India.

**BAIRD, Charles Washington,** American historian and religious writer, son of Robert Baird: b. Princeton, N. J., 28 Aug. 1828; d. 10 Feb. 1887. He was a graduate of Union Theological Seminary, and pastor in Brooklyn in 1859, and in Rye, N. Y., 1861. Besides works on the Presbyterian liturgies (which he was the first to collect and investigate) and local histories, he wrote 'History of the Huguenot Emigration to America' (2 vols., 1885), a work especially interesting to the genealogist.

**BAIRD, Sir David,** British general: b. Newbyth, Scotland, 6 Dec. 1757; d. 29 Aug. 1829. He entered the English army in 1772, and going to India distinguished himself at a disastrous engagement at Perambocum, 10 Sept. 1780, in which the small British force engaged was nearly cut to pieces after surrendering. His life was spared, but he was kept prisoner for four years. He attained the rank of major in 1787, and in October 1789 obtained leave of absence and returned to Great Britain. In 1791 he joined the army under Cornwallis, and as commander of a brigade of Sepoys he was present at the siege of Seringapatam, in 1791 and 1792; and likewise at the storming of Tippoo Saib's lines in the island of Seringapatam. In 1793 he commanded a brigade of Europeans, and was present at the siege of Pondicherry. On 9 May 1799, he commanded the storming party at the assault of Seringapatam; when, in requital of his brilliant services he was presented by the army, through the commander-in-chief, with the state sword of Tippoo Saib. In 1800 he had a command in Egypt, and with the increased rank of lieutenant-general commanded an expedition which sailed in October 1805, for the Cape of Good Hope, where he defeated the Dutch army and received the surrender of the colony. After a short period of service in Ireland Sir David sailed in command of an armament of 10,000 men for Corunna to assist Sir John Moore. Moore was killed in the battle of Corunna and Sir David succeeded to the chief command. He was created a baronet in 1809. In 1814 he was promoted to the rank of general, and in 1819 became governor of Kinsale, next year commander of the forces in Ireland and in 1827 governor of Fort George in Scotland. Consult Hook, 'Life of Sir David Baird' (1832).

**BAIRD, George Washington,** American naval officer: b. Washington, D. C., 22 April 1843. He received a public school and academic education and was appointed third assistant engineer in the United States navy in 1862. He was promoted through grades and retired with rank of rear-admiral in 1905. He is president of the Washington Board of Education and is a member of several engineering societies.

**BAIRD, Henry Carey,** American publisher: b. Bridesburg, Pa., 10 Sept. 1825; d. 31 Dec. 1912. He was a member of the publishing firm of Carey & Baird from 1845 to 1849, when he organized the firm of Henry Carey Baird and Company. He took an interest in politics first as a Whig and later a Republican. He was leader of the Greenback party in 1875, and by it was nominated for State treasurer of Pennsylvania and for mayor of Philadelphia. He declined the former nomination. He was an advocate of free silver and a protective tariff. He published pamphlets and contributions to works of reference and to periodicals on banking and other economic subjects.

**BAIRD, Henry Martyn,** American author and educator: b. Philadelphia, Pa., 17 Jan. 1832; d. Yonkers, N. Y., 11 Nov. 1906. He was graduated from New York University in 1850, and later took a course in theology at Union and Princeton. In 1859 he was appointed professor of the Greek languages and literature in the New York University. In 1906 he became a pensioner under the Carnegie fund. He was widely known for his researches in the history of French Protestantism, of which his works, given below, form the best succinct account from 1512 to 1802. He wrote 'History of the Rise of the Huguenots' (1879–1907); 'The Huguenots and Henry of Navarre' (1886); and 'The Huguenots and the Revocation of the Edict of Nantes' (1895); 'Theodore Beza, the Counsellor of the French Reformation' (1899).

**BAIRD, Julian William,** American chemist: b. Battle Creek, Mich., 14 Feb. 1859. He was graduated from the University of Michigan in 1882; was instructor in chemistry and in charge of the qualitative analysis and assaying

in Lehigh University, 1883–86; and became professor of analytical and organic chemistry in the Massachusetts College of Pharmacy, Boston, in 1886, and its dean in 1887.

**BAIRD, Robert,** American clergyman and author: b. Fayette County, Pa., 6 Oct. 1798; d. Yonkers, N. Y., 15 March 1863. He was graduated from Jefferson College in 1818, and at Princeton Theological Seminary in 1822. He spent several years in Europe, engaged in temperance work and in the revival of evangelical Protestantism. He published 'History of the Waldenses, Albigenses and Vaudois.' 'History of the Temperance Societies' (1836); 'Religion in America' (1844); 'Protestantism in Italy' (1845), etc. He was corresponding secretary of the American and Foreign Christian Union (1849–55, 1861–63). Consult his life by Henry M. Baird.

**BAIRD, Spencer Fullerton,** American naturalist: b. Reading, Pa., 3 Feb. 1823; d. Woods Hole, Mass., 19 Aug. 1887. He was graduated from Dickinson College in 1840, and in 1842 studied at the College of Physicians and Surgeons in New York city. He was the intimate of Audubon and Agassiz and aided in their work. He became professor of natural sciences at Dickinson College, Carlisle, Pa., 1845; assistant secretary Smithsonian Institution, 1850; United States commissioner of fish and fisheries, 1871; secretary of the Smithsonian Institution, 1878; and founder of the National Museum. Among his more important works are a 'Catalogue of North American Reptiles' (1853); 'Birds of North America' (with Cassin and Lawrence, 1860); 'Mammals of North America' (1858); 'History of North American Birds' (with Brewer and Ridgeway, 1874–84), etc. His work had a beneficent influence on natural history in the United States. He trained a great number of men who have attained great fame in various departments of scientific and economic natural history. A complete bibliography of his works and papers to 1882 was compiled by G. Brown Goode and published as 'Bulletin No. 20 of the United States National Museum' (Washington 1883). It contains 1,063 titles, and other works appeared from his pen from that time until his death five years later.

**BAIRD LECTURES.** In 1871 James Baird, the Scottish ironmaster, founded the Baird Lectures, for the defense of orthodox religious teaching. Two years later he made a gift of £500,000 to the Established Church of Scotland for the Baird Trust "to assist in providing the means of meeting and at least, as far as possible, promoting the mitigation of spiritual destitution among the population of Scotland." The gift was well intended, but it was hampered by conditions distasteful to the more liberal members of the establishment; and for this reason it was bitterly attacked by several of the foremost religious journals of England and Scotland and the secular Scottish press took a prominent and critical part in the discussion.

**BAIREUTH.** See BAYREUTH.

**BAITER,** bī'tẽr, **Johann Georg,** Swiss philologist: b. Zürich, 31 May 1801; d. 10 Oct. 1877. He was professor in the University of Zürich, and for three periods, the last from 1849 to 1865, director in the gymnasium there. He published, alone and with others, various editions of the classics, 'Panegyrics of Socrates,' 'Ciceronis Scholistæ,' 'Oratores Attici' (1838–50), etc. His title to distinction lay in his skill in textual criticism.

**BAIUS,** or **DE BAY, Michael,** Belgian theologian: b. 1513, at Melin, near Ath, in Hainaut; educated at Louvain, he was appointed professor of Scripture at this university in 1562, and was sent by the King of Spain (Charles V) to the Council of Trent, where he arrived when it was nearly over. Baius was one of the greatest theologians of the Roman Catholic Church in the 16th century. He founded systematic theology directly upon the Bible and the Christian fathers, leaving the scholastic method. He studied specially the writings of Saint Augustine and had his own interpretations of that father. The doctrines that the human will, when left to itself, could only sin; that even the mother of Jesus was not free from hereditary and actual sin; that every action which did not proceed from pure love of God was sinful; and that no penance was effectual for the justification of the sinner, but everything was to be attributed solely to the grace of God, through Christ, caused the superior of the Franciscan Order in Belgium to submit 18 of his propositions to the Sorbonne in Paris. The Sorbonne faculty condemned three of the propositions as false and 13 as contrary to Catholic teaching. Baius disavowed the condemned sentences, claiming that some of them had not been taught by him and that others had been presented incorrectly. After his return from Trent, he published theses which contained doctrines that were rejected by the Spanish and Italian universities to which they had been submitted. Finally 76 sentences taken from his works were condemned by Pius V in 1567 and some dispute arising about the meaning of this bull, it was confirmed by Gregory XIII and entrusted to the Jesuit Cardinal Toletus to deliver to Baius. Baius submitted; yet the opposition still continued, as did also his defense of some of his interpretations of Augustine in his lectures; and as the theological faculty at Louvain was entirely in his favor, he not only remained in the quiet possession of his dignities, but was also appointed dean of Saint Peter's in 1575, and in 1578 chancellor of the university. He died in 1589, and left the reputation of great learning, pure morals and a rare modesty. His interpretations of Augustine, which were called Baianism, were adopted by the Jansenists and were defended by them against their Jesuit opponents. His doctrine of pure undivided love to God has also been adopted by the Quietists. His writings, mostly polemical, were published at Cologne (4to 1696). Consult Duchesne, 'Histoire du Bayanism'; Linsenmann, 'Bayus und die Grundlegung des Jansenismus.'

**BAJA,** bŏ'yŏ, a Hungarian market town situated near the Danube, 90 miles south of Budapest. It has important manufactures of alcohol and shoes, is celebrated for its annual swine fair and has a considerable trade in grain and wine. Pop. about 21,000.

**BAJADA DEL PARANA,** bą-hä'dą dĕl pä'rą-nä'. See PARANA.

**BAJAZET**, bä'zhą-zā', **I, or BAYAZID I,** a Turkish sultan: b. 1347; d. 1403. In 1389 he succeeded his father, Murad of Amurath, who fell in the battle of Kosovo against the Serbians, and caused his brother Jacob, his rival for the throne, to be strangled. He made great and rapid conquests, in three years conquering Bulgaria, part of Serbia, Macedonia, Thessaly, and subduing the states of Asia Minor. From the rapidity of his conquests, he was called Ilderim ("Lightning"). In order to save Constantinople, blockaded by Bajazet, King Sigismund of Hungary (afterward Emperor of Germany) assembled a great army, but Bajazet met them at Nicopolis on the Danube and obtained a decisive victory over the allied Hungarians, Poles and French, 28 Sept. 1396. He would probably have now overturned the whole Greek empire if Timur had not overrun Asia Minor in 1400 and defeated him in 1402 in a battle near Angora. He himself fell into the power of the conqueror and died in Timur's camp, in Caramania. He was succeeded by his sons Soliman I, Musa and Mohammed I, the last named becoming sole ruler in 1413. Bajazet's reign was marked by great corruption in high and low places. Consult Gibbon, 'Decline and Fall of the Roman Empire' (London 1900), and Lane-Poole, 'Turkey' (New York 1889).

**BAJAZET** or **BAYAZID II,** Sultan of the Ottoman empire: b. 1447; d. 1513. He was the son of Sultan Mohammed II, the conqueror of Constantinople. He became Sultan in 1481, and was continually engaged in wars with Poland, Venice, Persia and Egypt. He suffered several serious reverses, but managed to strengthen the Ottoman power in Europe. His last years were embittered by disputes among his sons in regard to the succession. In 1512 he abdicated in favor of his son Selim, and died soon after near Adrianople. He was a lover of luxury, but also a patron of learning and the arts, and built several splendid mosques in Constantinople and elsewhere.

**BAJAZET, Mosque of,** a mosque at Constantinople, built in 1505 by Bajazet II. It is one of the finest specimens of Mohammedan architecture, and displays excellent proportions and great richness of detail in decoration. There are four Persian doorways and an octagonal fountain in the centre of the court.

**BAJOCCO,** bąyŏk'kō, or **BAIOCCO,** a papal state copper coin, whose value is about one cent. A Neapolitan coin, value about 83 cents, was also called Bajocco in Sicily.

**BAJURA,** bą-joo'rą, the banner of Mohammed.

**BAJZA,** boi'zŏ, **Joseph,** Hungarian poet and critic: b. Szücsi, 31 Jan. 1804; d. Pesch, 3 March 1858. He devoted himself to history, and edited a 'Historical Library' (1843–45) and the 'New Plutarch' (1845–47). He exerted a strong and salutary influence on Hungarian literature in history, in the development of a national drama, and,—in the conduct of two journals,—in establishing sound canons of literary taste. He also ranks among the best lyric poets of Hungary. His 'Poems' appeared in 1835, and his 'Collected Works' in 1861.

**BAKACS,** bŏ'kŏch, **Thomas,** Hungarian statesman, son of a peasant: b. about the middle of the 15th century; d. 1521. He held several bishoprics in succession, became chancellor of the kingdom, and finally cardinal-archbishop of Hungary. He preached a crusade against the Turks; but his army of peasarts and vagabonds turned their arms against the nobility, and a fierce civil war ensued, which ended in the final defeat of the insurgents by John Zapolya.

**BAKAIRI,** bą-kā-ī-rę, or **BACCAHIRY,** a Caribbean tribe of central Brazil, remarkable for their light complexion. The men have assembly houses, where they spend most of their time, which women are forbidden to enter.

**BAKAU,** Rumania, the capital of the district of the same name in Moldavia, on the Bistritz, 188 miles north of Bucharest, with which it is connected by rail. It contains a gymnasium and has a considerable trade in the agricultural products of the district. Pop. 16,-187, about one-fourth of which are Jews.

**BAKE,** bä'kĕ, **Jan,** Dutch philologist: b. Leyden, 1 Sept. 1787; d. 26 March 1864. From 1817–57 he was professor of Greek and Roman literature at the University of Leyden. Here he edited and published valuable editions of Posidonius, and of the astronomer Cleomedes, and assisted in the large and original work entitled 'Bibliotheca Critica Nova.' He published a series of philological articles, edited some of the works of Cicero and wrote an excellent essay upon the Greek tragedians.

**BAKEL,** French West Africa, fortified town and capital of the arrondissement of the same name in the colony of Senegal, on the Senegal River. It came into the possession of France in 1820, and was of great strategic importance in the struggles with the natives. It is now a great trade centre and the meeting place of caravans from the upper Senegal basin and the Niger. Dates, beeves, gold dust and ivory are the principal articles of trade. In the rainy season it is connected directly by a water route with Saint Louis on the coast. Pop. 1,760.

**BAKER, Alfred,** Canadian educator: b. Toronto. He was graduated B.A. at Toronto University in 1869, and after holding high school and other appointments became mathematical tutor in University College in 1875, registrar of Toronto University in 1881, professor of mathematics in 1887, and dean of the Faculty of Arts in 1912. He has published two works on geometry, edited treatises on trigonometry and mechanics and was president of the Royal Society of Canada 1915–16.

**BAKER,** Sir **Benjamin,** English engineer: b. near Bath 1840; d. Pangbourne, Berkshire, 19 May 1907. He joined the staff of Sir John Fowler in 1861, becoming his partner in 1875. In 1877 he superintended the removal of Cleopatra's Needle from Egypt to London and was consulting engineer in the construction of the Assouan dam. He was brought into consultation in connection with the design of the Saint Louis bridge across the Mississippi, and on the threatened inundation of the first tunnel across the Hudson he designed a pneumatic shield 2,000 feet in length which enabled the work to be successfully accomplished (1889–

91). In conjunction with Sir John Fowler he planned the bridge over the Firth of Forth. He was created K.C.M.G. in 1890. He wrote 'Long Span Iron Bridges,' 'Suspension Versus Cantilever Bridges,' 'The Strength of Beams' and 'Transportation and Re-erection of Cleopatra's Needle.'

**BAKER, Charles Fuller,** American zoologist: b. Lansing, Mich., 22 March 1872. He was graduated at the Michigan Agricultural College in 1892, and for several years taught biological subjects in various secondary schools. From 1904 to 1907 he was chief of the department of botany at the Cuban Agronomical Station, in 1907–08 curator of the botanical garden and herbarium at the Museu Goeldi, Para, Brazil. From 1909 to 1912 he was professor of biology at Pomona College, Claremont, Cal., in the latter year he was appointed professor of agronomy at the University of the Philippines. He had charge of the Colorado zoological and forestry exhibit at the Chicago Exposition of 1893, and in 1897–98 was zoologist and associate botanist to the Alabama Biological Survey. He was botanist to the H. H. Smith exploring expedition in the Santa Marta Mountains, Colombia, 1898–99, and has himself conducted field explorations in several Western States and in Brazil, Cuba and Nicaragua. He published 'Invertebrata Pacifica' and is co-author of 'Economic Plants of the World.'

**BAKER, Charles Whiting,** American civil engineer: b. Johnson, Vt., 17 Jan. 1865. He was graduated at the engineering department of the University of Vermont, became managing editor of *Engineering News* in 1887 and its editor-in-chief since 1895. In the 28 years of his connection with this journal its circulation has increased tenfold. He published in 1889 in Putnam's 'Questions of the Day' series, a study of the trusts and of competition, entitled 'Monopolies and the People,' of which three editions were printed. Many measures advocated in this book have in recent years been enacted into law. He is a member of the American Society of Mechanical Engineers and since 1913 has been one of the commissioners of the Palisades Interstate Park of New York and New Jersey.

**BAKER, Daniel,** American clergyman and author: b. Midway, Ga., 17 Aug. 1791; d. Austin, Tex., 10 Dec. 1857. He gained such a reputation as an effective preacher that his services were in demand as a revivalist. After 1830 he continued as an evangelist, traveling in the South, and at last settled in Austin, Texas, where he founded a college and became its first president. His published works include 'A Scriptural View of Baptism,' 'An Affectionate Address to Mothers, and one to Fathers,' 'Baptism in a Nutshell,' 'Revival Sermons.' Consult 'Memoirs' edited by his son (Philadelphia 1859).

**BAKER, David (Augustine),** Benedictine ascetical writer: b. 1575; d. 1641. The most original and ablest spiritual writer among English Catholics during the first half of the 17th century. Having finished his studies at Oxford he devoted himself to law at Lincoln's Inn and later at Inner Temple. In his 40th year he became a convert to the Catholic faith, and a few years later was ordained priest and was subsequently received into the Benedictine Order by the Italian fathers in England. Dugdale and Dodsworth are indebted to his historical labors for much of the data found in their monumental works. It was Father Baker who discovered that the old English Benedictine monastery of Saint Peter at Westminster was legally continued in the person of an old priest, Dom Robert (Sigebert) Buckley, who had suffered 44 years' imprisonment for refusing the oath of supremacy. By this sole survivor David Baker was professed into the monastery of Westminster, and thus became one of the first three priests to form the connecting link between the old and the new congregation in England. It was as spiritual director at Douai and Cambrai that he composed his admirable treatises on the spiritual life. Consult Wood, 'Athenæ Oxoniensis'; Taunton, 'English Black Monks of Saint Benedict'; 'Dictionary National Biography' (Vol. III, London 1885).

**BAKER, Edward Dickinson,** American soldier and politician: b. London, England, 24 Feb. 1811; d. 21 Oct. 1861. He came to the United States in 1816, was elected to the Illinois legislature in 1837, became a State senator in 1840, and was sent to Congress in 1844. He served under General Scott in the war with Mexico and commanded a brigade at the battle of Cerro Gordo, and was elected United States senator from Oregon in 1860. He entered the Federal army at the outbreak of the Civil War and was killed at the battle of Ball's Bluff while leading a charge. Consult Glazier, William, 'Heroes of Three Wars' (1880).

**BAKER, Frank,** American zoologist: b. Pulaski, N. Y., 22 Aug. 1841. He is professor of anatomy in the University of Georgetown since 1883, and superintendent of the National Zoological Park in Washington, D. C.; assistant superintendent of United States life saving service 1899–90. He is a Fellow of the American Association for the Advancement of Science, and a member of the Washington Academy of Sciences and the Anthropological and the Biological Societies, all in Washington. He received the degree of LL.D. from Georgetown in 1914. He has contributed articles to the 'Reference Handbook of Medical Sciences,' was a coeditor of 'Billings Medical Dictionary' and the 'Standard Dictionary.' From 1890 to 1897 he was editor of the *American Anthropologist.*

**BAKER, Frank Collins,** American zoologist: b. Warren, R. I., 14 Dec. 1867. He was educated at Brown University and at the Philadelphia Academy of Natural Sciences. The latter institution sent him to Mexico with an exploring expedition in 1890. In 1891–92 he was invertebrate zoologist of Ward's Natural Science Establishment and secretary of the Rochester Academy of Sciences. In the latter year he became curator of zoology of the Field Columbian Museum of Chicago, and in 1894 curator of the Chicago Academy of Sciences. He has published 'A Naturalist in Mexico' (1895); 'Mollusca of the Chicago Area' (1898–1902); 'Shells of Land and Water' (1903); 'The Lynmoeidæ of North and Middle Amer-

ica' (1911), and contributions to zoological journals, principally on mollusca.

**BAKER, George Pierce,** American scholar and educator: b. Providence, R. I., 4 April 1866. He was graduated at Harvard in 1887, and in the following year was appointed instructor in English at that institution, becoming successively instructor in forensics 1889, assistant professor of English 1895, and professor of English 1905. He established and conducted a department of criticism and dramatic writing at Harvard. He has published 'The Principles of Argumentation' (1895–1905); 'The Development of Shakespeare as a Dramatist' (1907), and edited 'Specimens of Argumentation' (1893); 'The Forms of Public Address' (1904); 'Some Unpublished Correspondence of David Garrick' (1907); 'The Correspondence of Charles Dickens and Maria Beadnell' (1913), also various Elizabethan plays. In 1907–08 he was Hyde lecturer at the Sorbonne, Paris.

**BAKER, Henry,** English naturalist and poet: b. May 1698; d. 25 Nov. 1774. Apprenticed to a bookseller, he afterward devoted his attention to developing an improved system of education for the education of deaf-mutes, and thus amassed a fortune. He was associated with Defoe in the publication of the 'Universal Spectator' (1728). In 1744 he obtained the Copley medal for his microscopical discoveries on crystallization. He wrote 'The Microscope Made Easy,' 'Employment for the Microscope,' many scientific papers and several poetical works.

**BAKER, Sir Henry Williams,** English hymn writer: b. London, 27 May 1821; d. Monkland, 12 Feb. 1877. He was educated at Trinity College, Cambridge, and in 1851 was presented to the vicarage of Monkland near Leominster. He succeeded his father as 3d baronet in 1859. In 1852 he wrote his first hymn, 'Oh, what if we are Christ's.' Two others appeared in 1861: 'Praise, O Praise Our Lord and King' and 'There Is a Blessed Home.' He is chiefly known as the promoter and editor of 'Hymns Ancient and Modern,' first published in 1861. To it he contributed many original hymns as well as several translations of Latin hymns. Strong objection was made to Baker's hymn addressed to the Virgin Mary, 'Shall We Not Love Thee, Mother Dear?' Baker held the doctrine of the celibacy of the clergy. He published also 'Daily Prayers for the Use of Those Who Have to Work Hard,' and a 'Daily Text-book' for the same class, and some pamphlets on religious subjects. Consult the *Literary Churchman* (24 Feb. 1877).

**BAKER, Herbert Brereton,** English chemist: b. Blackburn, about 1857. He was educated at the Manchester Grammar School and at Balliol College, Oxford, where he was a demonstrator in chemistry in 1883–85. He was head of the science department of Dulwich College 1885–1902, and headmaster of Alleyn's School, Dulwich, in 1902–03. He became a Fellow of the Royal Society in 1902, and in 1912 was appointed professor of chemistry in the Imperial College of Science and Technology, London. He has published 'Combustion in Dried Oxygen' (1885); 'Action of Light on Silver Chloride' (1892); 'Influence of Moisture on Chemical Action' (1894); 'Drying of Ammonia and Hydrogen Chloride' (1898); 'Vapor Density of Dried Mercurious Chloride' (1900); 'Union of Hydrogen' (1902); and, in conjunction with Professor Dixon, 'The Chemical Inactivity of Rœntgen Rays' (1896); 'Gaseous Nitrogen Trioxide,' with Mrs. Baker (1907).

**BAKER, Ira Osborn,** American educator: b. Linton, Ind., 23 Sept. 1853. He became professor of civil engineering in the University of Illinois in 1880; is the author of 'Levelling' (1886); 'Engineers' Surveying Instruments' (1892); 'Treatise on Masonry Construction' (1889–1909); 'Durability of Brick Pavements' (1893); 'Treatise on Roads and Pavements' (1903–13). Member American Society of Civil Engineers, Western Society of Engineers, Society for Promotion of Engineering Education.

**BAKER, James Heaton,** American soldier: b. Monroe, Ohio, 6 May 1829; d. 27 May 1913. He was educated at Ohio Wesleyan University. He was secretary of State of Ohio in 1854–56, and of Minnesota in 1857–61, when he joined the army as colonel of the 10th Minnesota Volunteer Infantry. He was mustered out of the service in 1865 with the rank of brigadier-general. Afterward he was commissioner of pensions under President Grant, was surveyor-general of Minnesota 1875–79, and State railroad commissioner 1881–86. In 1879 he became proprietor of two Republican newspapers which he combined under the name of the Mankato *Free Press*. He wrote 'Lake Superior' (1879) and 'The Sources of the Mississippi' (1887), both in the 'Collections of the Minnesota Historical Society'; also 'The Lives of the Governors of Minnesota' (1908).

**BAKER, James Hutchins,** American university president: b. Harmony, Me., 13 Oct. 1848. He was principal of the Denver High School 1875–92; president of University of Colorado 1892–1914, and since the last named date president emeritus. His publications include 'Elementary Psychology' (1890); 'Education and Life,' 'American Problems' (1907); 'Educational Aims and Civic Needs' (1915).

**BAKER, John Gilbert,** English botanist: b. Guisborough, Yorkshire, 13 Jan. 1834, and was appointed assistant curator at the herbarium at Kew in 1866 and was keeper 1890–99. He was gold medalist of the Linnean Society for 1899, and obtained the Veitch gold medal for horticulture in 1907. He is the author of works on the flora of North Yorkshire, the English Lake District, and the Mauritius, of handbooks on ferns, and (with Sir W. J. Hooker) of «Synopsis Filicum.»

**BAKER, Moses Nelson,** American sanitary engineer and editor: b. Enosburg, Vt., 26 Jan. 1864. Associate editor and editor *Engineering News* (1887); editor 'Manual American Waterworks' (1888–97); author various books on water and sewage treatment, and numerous encyclopedia articles on municipal engineering, health and sanitation and government. A member board of health, Montclair, N. J., from 1895 and its president 1904–15; vice-president New Jersey State Department of Health 1915; chairman executive committee National Municipal League 1913.

**BAKER, Newton Diehl,** American statesman: b. Martinsburg, W. Va., 3 Dec. 1871.

He was graduated at Johns Hopkins University in 1892 and received the degree of LL.B. at Washington and Lee University in 1894. In 1896–97 he served in the capacity of private secretary to Postmaster-General Wilson and in the latter year established a law practice at Martinsburg, W. Va. From 1902 to 1912 he was city solicitor of Cleveland, Ohio, and was elected mayor of that city in 1912, and re-elected in 1914. On 7 March 1916 he was appointed Secretary of War by President Wilson.

**BAKER, Osmon Cleander,** American clergyman: b. Marlow, N. H., 30 July 1812; d. 20 Dec. 1871. He was educated at Wesleyan University; spent several years in teaching, and was one of the founders of the system of Methodist Episcopal theological schools. He was professor in the Biblical Institute in Concord, N. H., 1847–52, and in the last named year was elected a bishop. His work, 'Guide-Book in the Administration of Discipline of the Methodist Episcopal Church' (1855), is a standard authority.

**BAKER, Ray Stannard,** American author and journalist: b. Lansing, Mich., 17 April 1870. He was graduated at the Michigan Agricultural College in 1889, and later took a partial law course and studies in literature at the University of Michigan. He was reporter and sub-editor of the Chicago *Record* 1892–97, managing editor of McClure's Syndicate 1897–98, and associate editor of *McClure's Magazine* 1899–1905. From 1906 to 1915 he was one of the editors of the *American Magazine.* He has contributed to several magazines many articles on social and economic subjects. His published volumes include 'Boys' Book of Inventions' (1899); 'Our New Prosperity' (1900); 'Seen in Germany' (1901); 'Second Boys' Book of Inventions' (1903); 'Following the Color Line' (1908); 'New Ideals in Healing' (1909); 'The Spiritual Unrest' (1910).

**BAKER, Sir Richard,** English historian: b. Kent 1568; d. 1645. He was educated at Oxford, and knighted in 1603 by James I; in 1620 he filled the office of high sheriff of Oxfordshire. Shortly afterward he was thrown into Fleet Prison because of having given security for a debt contracted by his wife's family, which he was unable to pay. During his imprisonment he wrote 'Chronicle of the Kings of England,' first published in 1643, and afterward continued by Edward Phillips, the nephew of Milton, and others, a work popular at the time, but not of permanent value. He died in prison.

**BAKER, Sir Samuel White,** English explorer and author: b. London, 8 June 1821; d. 30 Dec. 1893. He was trained as an engineer, and at the age of 24 went to Ceylon, where he founded an agricultural settlement at Nuwara Eliya in 1847. In the early part of 1861, accompanied by his wife, he set out for Africa on a journey of exploration. When he had ascended the Nile as far as Gondokoro he met Speke and Grant returning after their discovery of the Victoria Nyanza Lake, and learned from them that another large lake in the district had been spoken of by the natives. This lake he determined to discover, and after many adventures he and his wife beheld the Albert Nyanza, on 14 March 1864. On his return home he was received with great honor and was knighted. In 1869 he returned to Africa as head of an expedition sent by the Khedive of Egypt to suppress the slave trade, and to annex and open up to trade a large part of the newly-explored country, being raised to the dignity of pasha. Returning in 1873, he was succeeded by the celebrated Gordon. In 1879 he explored the island of Cyprus and subsequently traveled in Asia and America. His writings include 'The Rifle and the Hound in Ceylon' (1854); 'Eight Years' Wanderings in Ceylon' (1855); 'The Albert Nyanza' (1866); 'The Nile Tributaries of Abyssinia' (1867); 'Ismailia, a Narrative of the Expedition to Central Africa' (1874); 'Cyprus as I saw It in 1879'; 'Wild Beasts and Their Ways' (1890); 'True Tales for My Grandsons' (1883); also 'Cast up by the Sea,' a story published in 1869.

**BAKER, Thomas,** English antiquary: b. 1656; d. 1740. His 'Reflections on Learning' (1709–10) went through seven editions. He left in manuscript 42 folio volumes of an 'Athenæ Cantabrigiensis,' from which a 'History of St. John's College' was edited by Professor Mayor. The former was published in 1867, and the latter in 1869. Consult Horace Walpole, 'Works,' ii, 339; 'Dict. of National Biography' (London 1885).

**BAKER, Valentine,** English military officer, also known as Baker Pasha: b. 1825; d. Tel-el-Kebir 1887. He was a brother of Sir Samuel White Baker. For his services in the Crimean War he was made colonel of the 10th Hussars. His career was clouded in 1875 by an insult to a young woman, for which he was imprisoned. In the Russo-Turkish War of 1877 he was in the Turkish service, and subsequently served in Egypt. He wrote 'Clouds in the East' (1876); and 'The War in Bulgaria' (1879).

**BAKER, William Mumford,** American novelist and clergyman: b. Washington, D. C., 27 June 1825; d. South Boston, Mass., 20 Aug. 1883. He was graduated at Princeton 1846, and held Presbyterian pastorates in Texas for 15 years, when he returned to the North and accepted a charge in South Boston. As a writer, one of his most important books was 'Inside: A Chronicle of Secession' (1866), secretly written during the war, and giving an illuminating picture of Southern sentiment. Other works are 'Life and Labors of Rev. D. Baker' (1858); 'The Ten Thenopanies' (1883). His novels, several of which appeared serially, include 'Mose Evans' (1874); 'Carter Quarterman' (1876); 'Colonel Dunwoodie' (1878); 'The Virginians in Texas' (1878); 'His Majesty Myself' (1879); and its sequel, 'The Making of a Man' (1884); 'Blessed Saint Certainty' (1881).

**BAKER, Mount,** an occasionally active volcano in Whatcom County, Wash., belonging to the Cascade Range; elevation, 10,827 feet.

**BAKER AND THE BAKER'S WIFE, The,** names popularly given to Louis XVI of France, and Marie Antoinette, because they gave bread to the starving mob at Versailles on 6 Oct. 1789.

**BAKER CITY,** Ore., city and county-seat of Baker County, situated on the east fork of

the Powder River, 360 miles east of Portland, on the Oregon Railroad. It is the centre of an extensive farming, gold-mining and stock-raising region, and has a considerable export trade. It is governed by a mayor, biennially elected, and a city council, and operates the water works. It was settled in 1860, incorporated in 1872 and has lately adopted the commission form of municipal government. Pop. (1910) 6,742.

**BAKER UNIVERSITY,** situated at Baldwin, Kan., a coeducational institution. It was founded in 1858 under the auspices of the Methodist Episcopal Church. The departments include the College of Liberal Arts, academy, musical conservatory, public speaking, fine arts, household arts, preparatory professional courses and summer school. There are 32 professors and instructors and 515 students. Its library contains 14,000 volumes, and the grounds and buildings are valued at $80,000; graduates, 1,200; productive funds, $50,000; income, $40,000.

**BAKER'S ANTELOPE,** a large antelope (*Hippotragus Bakeri*) of equatorial Africa, discovered by Sir Samuel Baker. It is pale brownish-red with black stripes on the shoulders and has massive horns.

**BAKER'S DOZEN,** a familiar phrase supposed to have originated in an old practice of bakers who, when a heavy penalty was inflicted for short weight, used to give a surplus number of loaves, called the inbread or makeweight, to avoid all risk of incurring the fine. Until at least quite recently it still was the custom in Great Britain. Thirteen, therefore, became a baker's dozen, and 13 also is assumed to be the number of witches who sat down together at dinner on the Lord's Day, even as it was the number who were at that last Passover supper which immediately preceded the betrayal of Christ. Thirteen was also called the «devil's dozen.»

**BAKERSFIELD,** Cal., town and county-seat of Kern County, on the Kern River and on the Southern Pacific Railroad, 168 miles northwest of Los Angeles. Settled in 1872 in the centre of an oil and mineral and of a stock-raising and fruit-growing region, it has a good trade and active manufacturing interests. The United States census of manufactures for 1914 reported 51 industrial establishments of factory grade, employing 1,046 persons, of whom 895 were wage earners, receiving annually $879,000 in wages. The capital invested aggregated $2,749,000, and the year's output was valued at $2,928,000; of this, $1,305,000 was the value added by manufacture. The city has adopted the commission-manager plan of the commission form of government. Pop. 16,000.

**BAKEWELL, ROBERT,** English agriculturist: b. 1725; d. 1795. He succeeded his father in 1760 as occupier of the Dishley farm in Leicestershire, and then began experiments for the improvement of cattle (introducing the celebrated long-horned breed), and also of horses, pigs and sheep. He also introduced into English agriculture the practice of flooding meadows. He never contributed anything to literature, but Arthur Young, in his annals of agriculture, fully described and praised his plans and improvements.

**BAKEWELL,** England, an ancient town of Derbyshire, on the Wye, 25 miles northwest of Derby. It is situated in a picturesque region, remarkable for its scenic beauty; contains chalybeate springs and warm baths, a museum and a fine old Gothic church. Arkwright first established cotton mills here, and in the neighborhood are black-marble and limestone quarries and coal and zinc mines. The town suffered severely from a visitation of the plague in the 17th century. Pop. (1911) 3,078.

**BAKHMUT,** bäkh-moot'. See BACHMUT.

**BAKHTCHISSARAI,** bäk'chę-są-rī', Russia, the capital of the government of Taurida; situated on the Tchoorook, 15 miles southwest of Simferopol. It consists of a single street, built along the banks of the Tchoorook and lined in Oriental fashion with bazaars and workshops. It contains also several mosques, whose tall minarets rise high above the neighboring houses. Here also is the ancient palace of the khans who ruled over the Tauridian state before the rise of Russian power. In one of the old Jewish synagogues a parchment roll of the Bible — the most ancient, according to some Hebrew scholars — was discovered. It is now in the Imperial Library. The principal articles of manufacture are the well-known red and yellow morocco leather, fur coats, boots and shoes, and cutlery. The town is a mart for the products of the neighboring country, such as tobacco, flax, grain, and especially fruits. Its population, principally Mohammedans, number about 13,000, including 3,000 Christians, 1,000 Jews and some Greeks.

**BAKHTEGAN,** bäkk-tē-gän, a salt lake in Persia, 47 miles east of Shiraz; 74 miles long and from 4 to 13 miles wide. Large quantities of salt are gathered from its basin during the summer drought.

**BAKHTIARI,** bäkh'tē-ä'rē. (1) A range of mountains in the province of Bakhtiari in Persia extending parallel to the Arva and Laristan ranges. (2) A half-civilized nomadic tribe living in the above mountains, estimated to number about 200,000.

**BAKHUIZEN,** bäk'-hoi-zen, **Van Den Brink, Reinier Cornelis,** Dutch historian: b. Amsterdam, 28 Feb. 1810; d. The Hague, 15 July 1865. In 1854 he was appointed keeper of the state archives, and was long connected with *Gids,* an important monthly publication. His principal works are 'Vondel met Roskam en Rommelpot' (latest ed., 1891); 'Variæ Lectiones ex Historiæ Philosophiæ Antiquæ' (1842); 'La retraite de Charles Quint' (1842); 'Het huwelijk van Prins Willem met Anna van Saksen' (1853); Het Rijksarchief' (1857); 'Cartons voor de geschiedenis van den nederlandsche Vrijheidsoorlog' (1860–77).

**BAKHUYSEN, Ludolf,** Dutch marine painter: b. Emden 1631; d. 1708. He was for a time a clerk and teacher at Amsterdam. He studied painting under Aldert van Everdingen and Heinrich Dubbels, and soon came to be regarded as one of the greatest marine painters of the time. He depicted stormy seas in contrast to his rival Wilhelm van der Velde, who depicted the sea in its calm moods. He often risked his life and the lives of his companions

in the quest of subjects for his pictures. He did not excel in coloring, but succeeded in catching the spirit of the sea in its wilder aspects. Numerous examples of his work are extant. One, depicting a coast scene, is in the Amsterdam Museum; his 'Rough Sea at the Mouth of the Maas' hangs in the Louvre, and two of his pictures are in the Museum at The Hague. Seven of his works are preserved in the National Gallery, London. He made several drawings of vessels for Peter the Great, who was his pupil for a time. Late in life he began etching on copper. He also painted several portraits. Consult Van der Willigen, 'Les artistes de Haarlem.'

**BAKI,** bä'kē, the greatest lyric poet of Turkey; d. about 1600. His 'Divan' contains almost exclusively odes in praise of the Sultan.

**BAKING MACHINERY.** See BREAD AND BREAD-MAKING.

**BAKING POWDER,** a chemical preparation used in the place of yeast to give lightness to bread and other similar articles of diet. Yeast induces a kind of fermentation, accompanied by the generation of bubbles of the gas known to chemists as carbon dioxide; and it is the development of these bubbles within the dough that causes it to swell (or "rise") and become light. When baking powder is used in the place of yeast, the action is similar, except that the gas is generated by direct chemical action, instead of by fermentation. The best baking powders contain bicarbonate of soda or bicarbonate of ammonia as their alkaline constituent, intimately mixed with tartaric or phosphoric acid, or an acid tartrate or phosphate. So long as the powder is kept dry, its acid and alkaline constituents do not combine with each other; but when moistened, combination takes place, and carbon dioxide is generated, just as in the case of yeast. Owing to the cost of tartrates and phosphates, alum is not infrequently used as the acid constituent in the cheaper powders; but health authorities almost universally condemn this substitution.

**BAKKEBAKKE,** bäk'kē-bäk'kē, a tribe of African pigmies dwelling in the French Kongo territory.

**BAKONYWALD,** bŏ'kōn-y'-vält, a mountain range in Hungary, between the Raab and Lake Balaton, separating the great and little Hungarian plains. Average elevation, 2,000 feet. It is covered with forests on the mast of which large herds of swine are fed. There are fine quarries of marble in the mountains.

**BAKSHEESH,** bäk-shēsh', or **BAKSHISH,** an Eastern word, denoting a present or gratuity. In Egypt and other parts of the Turkish empire the traveler has scarcely set foot on shore before clamors for baksheesh, on the most frivolous pretexts, or in simple beggary, without pretext at all, assail his ears from every quarter. Baksheesh is the first Arabic word with which he becomes acquainted, and he acquires it unwillingly.

**BAKST, Leon Nikolajewitsch,** Russian decorative designer: b. Petrograd 1886. He was of Jewish parentage and studied in the Petrograd Academy of Arts and under the patronage of a Russian Grand Duchess continued his studies in Paris. On his return to Russia he settled in Moscow, where he painted genre scenes of Russian life. The authorities were displeased with his intruding of political conditions into his paintings and he withdrew to Paris in 1906, where he soon acquired a great reputation as a designer of stage settings. His principal efforts in this field are the settings for 'Cleopatra' and 'Schaherazade' for the Russian ballet (1909). These were followed by the designs for 'Salome'; 'Narcissus, Daphnis and Chloe'; 'A Faun's Afternoon,' in Greek settings; 'The Blue God,' 'Anamese and Javanese settings; 'Thamar,' Transcaucasian and Chinese; 'The Butterflies,' and 'The Carnival'; the settings for Wolf-Ferrari's opera, 'The Secret of Suzanne'; and for D'Annunzio's 'La Pisanelle' and 'Saint Sebastien.' The ballet for his latest production, 'The Orientale,' was given in New York in 1914, where an exhibition of his principal designs and drawings was held in 1913–14, being shown later in other American cities.

**BAKU,** Russia, town in Georgia, on the west coast of the Caspian Sea. The rocky peninsula upon which it is built and the islands in the bay are composed of Tertiary strata, abounding in fossil shells. Through these strata numerous springs of naphtha and petroleum issue, together with streams of inflammable gas, and eruptions of mud from so-called mud volcanoes. These phenomena give to the region the name of the Field of Fire, and formerly made Baku the sacred city of the Guebres or Fire Worshippers. Naphtha is so abundant as to be an article of commerce. The chief product of the region, however, is petroleum. Over 500 oil wells are operated, producing large quantities of petroleum, much of which is carried by pipes directly to the refineries. Baku has a large trade, exporting besides the oil, grain, salt, etc. It has grown very rapidly in recent years, its prosperity being due to the petroleum industry which is chiefly in the hands of foreign capitalists. It has several shipbuilding yards. Along the south side of the city a new quay has been constructed; on this are erected modern stores and bazaars. The older portion has winding, narrow streets and here also are some remains of the palace of the khans, and the mosques of the shah, erected in 1078. The climate is mild; the harbor having been frozen over but once in 80 years. There are also tobacco factories and chemical works. The position of Baku makes it the market-place for the Russo-Persian trade. Cotton, rice, silk, wine, dried fruits and walnut wood pass through from Persia to Russia and western Europe, in exchange for goods of Russian manufacture. The population is mostly Tatar, and constitutes the laboring and small trading elements; Russians fill financial, commercial and official posts; Armenians are among the leading merchants. Baku was in Persian hands from 1509 to 1723; in the latter year it was taken by the Russians, who restored it to the Persians in 1735. In 1806 it again came into possession of Russia and has since remained under her rule. In 1901 it was the scene of a great conflagration, and in 1905 sanguinary conflicts took place here between the Armenian and Tatar elements. The oil industry suffered great damage, the losses reaching into the tens of millions of rubles. The commercial and industrial sections

of the town were almost obliterated. Pop. (1910) 217,900. Consult Henry, 'Baku: An Eventful History' (1906); Louis, "The Baku Petroleum District" in *Engineering Magazine* (No. XV, New York 1898); Marvin, 'The Region of Eternal Fire' (new ed., London 1891).

**BAKUBA,** bä-koó-bä, a Bantu-speaking people of the Kasai district of the Belgian Kongo. They are related to the Baluba, and are often referred to under the name "Bush-ongo." They are noted among all the Kongo peoples for their highly-developed artistic sense, which finds expression in admirable wood-carvings, decorated goblets toilet boxes, drums, etc., and in the plush-like pile cloth woven of raffia-palm fibre by the men and decorated with designs sewed on by the women. Early travelers have described this people briefly, and they have been lately studied by Frobenius, Torday and Joyce. Consult Torday and Joyce, 'Les Bushongos' (Publications of the Tervueren Museum, Belgium, 1911), and Johnston, Sir Harry, 'George Grenfell and the Congo.'

**BAKUNIN,** ba-koon'yen, **Michel,** Russian anarchist: b. 1814; d. Berne, 13 Jan. 1876. He served in the Imperial guard 1832–38. In 1841–43 he was in Germany, engaged in philosophical study. In 1843, he went to Paris, and entered into relations with the Polish exiles, and shortly afterward to Switzerland, where he participated actively in various socialist and communist associations. The Russian government in 1847 ordered him to return home; but he refused, and his estate was confiscated. In the same year during the excitement produced in Paris by the question of parliamentary reform, he made a speech invoking the fusion of Poles and Russians, for the better and easier revolutionizing of Russia, on account of which the Russian government demanded his expulsion from France. For the next two years he was active in the revolutionary movement at Berlin, at Prague and at Dresden. He was thrice condemned to death for his participation in the revolutionary movement at Dresden; a second time on being turned over to the Austrians; and a third time on being handed over to the Russian authorities. The sentence was commuted to penal servitude, and he was sent to Siberia in 1855. In 1860, he escaped in an American ship to Japan, and from there went by way of the United States to London. Here he joined the work of the revolutionary socialist movement under Marx and Engels, and in 1869 founded the Social Democratic Alliance, which later joined the International Workingmen's Association. His views were thoroughly anarchistic and when he tried to impose them upon the association he was expelled by The Hague Congress in 1872. He took part in the rising at Lyons in 1870. In 1873 Bakunin stopped active work and lived for the rest of his life in Switzerland. Consult for his writings, Nettlan's, 'Biographie de l'anarchie' (Paris 1897).

**BAKWIRI,** bą-kwē'-rę, a Bantu-speaking tribe of Kamerun, west Africa. They are of medium height, well proportioned and with regular features. Drum signaling is much used, and by it news is rapidly conveyed to long distances. Witchcraft and sacrifices still prevail and cannibalism was practised formerly.

**BALA,** bā-lą, a very ancient town of north Wales, at the north end of the Bala Lake, famous for the manufacture of knitted stockings, and gloves of strong and soft texture. At the south end of the town is a large artificial mound, supposed to be of Roman origin. This mound was occupied by the Welsh as a fort in early days to prevent the incursions of the English.

**BALA BEDS** (also known as the Caradoc group), a local deposit in north Wales, near Bala, which form the upper group in the Lower Silurian of Murchison (now known as Ordovician). The group in the type locality consists of two limestones, separated by about 1,400 feet of sandy and slaty rocks, with many lava flows. The lower limestone, called the Bala limestone, is about 25 feet thick. The graptolites are the dominant fossils of the group.

**BALAAM,** a Biblical personage, the son of Beor, and a prophet of Pethor by the Euphrates. The children of Israel had reached, in their journey, the plains of Moab. Balak, the King, terrified at seeing so great a host invading his territory, sent, therefore, to Balaam, a well-known prophet and soothsayer, to come and curse these hosts for him, so that, peradventure, he might then smite them and drive them out of the land. Balaam, warned of God in the night, refused to go with the messengers, and sent them away. Balak sent yet others. He at first also refused them, but in the morning he went, with the divine injunction to speak what the Lord should tell him. The angel of the Lord met him in the way, gave the ass he rode a vision in three several instances, and each time Balaam angrily smote the beast for her involuntary manifestations of terror. After the third beating an interlocution ensued between the ass and the master, when the Lord opened the eyes of Balaam, and seeing the angel, he conversed with him instead of the ass. As the result of the conversation, Balaam was permitted to go on, and the charge repeated to speak only that which the Lord should tell him. Coming unto Balak, he informed him that he could only speak that which God shall put into his mouth. Balaam refused to curse Israel, but pronounced a blessing upon them, in the three several places to which Balak brought him in the vain hope of securing his purpose. This is the Old Testament history of the transaction, given in Numbers xxii–xxiv. In Numbers xxxi, 8–16, and Joshua xiii, 22, Balaam is mentioned as advising Balak to lead the children of Israel into idolatry, which, according to his directions, they did, and hence arose a war with Moab.

**BALACHONG,** an Oriental condiment, composed of small fishes or shrimps, pounded up with salt and spices and then dried.

**BALÆNA,** the genus including the Greenland or right whale, type of the family *Balænidæ,* or whale-bone whales. Hence *baleen*-whalebone.

**BALÆNICEPS** ("whale-head"), a genus of African wading birds belonging to the region of the upper Nile, intermediate between the herons and storks, and characterized by an enormous bill, broad and swollen, giving the

only known species (*B. rex*), also called shoebird. It feeds on fishes, water-snakes, carrion etc., and makes its nest in reeds or grass adjoining water. The bill is yellow, blotched with dark brown, the general color of the plumage dusky gray, the head, neck and breast slaty, the legs blackish.

**BALAGUER**, bä-lä-gär', **Victor**, Spanish writer: b. Barcelona, 11 Dec. 1824; d. Madrid, 14 Jan. 1901. He became keeper of the archives at Barcelona, professor of history in the university there; and was an active Liberal politician and, in 1888, chief of the council on the Philippine Islands. He wrote 'The Troubadours of Montserrat' (1850); 'Political and Literary History of the Troubadours' (1878–80); 'Poems' (1874); 'Don Juan de Serravalle' (5th ed. 1875), etc.

**BALAHISSAR**, bä'lạ-hĭs-sär', Turkey-in-Asia. A village in the southwestern part of the province of Angora, Asia Minor. It is on the site of the ancient Pessinus, famous for its worship of Cybele. Among fragments of marble columns, friezes, etc., rise the ruins of her gorgeous temple, and remains of a theatre in partial preservation, a castle and a circus. The people of Siorihissar use this region as a quarry, and the ancient ruins are fast disappearing.

**BALAK** ("making waste or empty"), King of Moab, who, according to a story in Numbers xxii–xxiv, hired the prophet Balaam to come and curse the Israelites before their entry into Canaan. Balaam tried to carry out Balak's wishes, but by divine inspiration, he pronounced a blessing instead of a curse and foretold the increase in the multitudes of the Israelites and the power of their King. See BALAAM.

**BALAKIREV, Mily Alexeivich**, Russian composer: b. Nizhni Novgorod, 13 Dec. 1837 (13 Jan. 1837); d. 30 May 1910. He began studying natural science at Kazan, but, having learned the rudiments of music from his mother and displaying considerable aptitude, he was taken in hand by Ubilishev, author of a 'Life of Mozart,' who taught him the classical masterpieces and something of instrumentation. In 1855 he appeared in Saint Petersburg (Petrograd) as a pianist and created a sensation with his first compositions. Balakirev speedily became the acknowledged leader of the young Russian composers, headed by a remarkable set of quasi-amateurs who styled themselves the "Five Neo-Russian innovators," a coterie united in friendly rivalry and patriotic ambition, consisting of Balakirev, Musorgsky, Cui, Rimsky-Korsakov and Prince Alexander Borodine. Their musical philosophy was summed up in their phrase "Russian music for the Russians." They studied ecclesiastical melodies, folk-songs and dances, investigated the various Oriental elements permeating Russian art, and strove for novelty in harmonization, melody and piquancy of orchestral effect. The influence of Glinka (q.v.) and Dargomishky pervaded their development in one direction; that of Berlioz, Schumann and Liszt in another. From this ensemble they created a new art-ideal which became the model of the whole so-called "neo-Russian School." Balakirev was the soul of the movement, the teacher of his colleagues, the critical analyst of the masters, the Luther of the musical reformation in Russia. He composed orchestral pieces in the manner of Berlioz and Liszt, and pianoforte pieces in a manner of his own — of which the Oriental fantasia "Islamey" is the most ingenious. In 1862 he founded the Music Free School, and conducted its concerts for a number of years; from 1867 to 1870 he also conducted the symphony concerts of the Imperial Russian Musical Society. Among his works the finest are the orchestral fantasia *Tamara* and the symphony in C major. He collected and recorded a great number of Russian folk-songs. He first became known outside of his own country in 1867, when he conducted Glinka's "Ruslan and Lyndmila" in Prague. All his early companies made their mark: Musorgsky wrote some wild, eccentric songs; the truculent Cui produced eight operas, 160 songs and a number of piano pieces; Borodine left symphonies, orchestral sketches, string quartets and a dozen songs; and Rimsky-Korsakov wrote about 12 operas, many songs, piano concertos, and published a collection of folk-songs. Consult Cui, 'La Musique en Russie' (Paris 1880); Grove's 'Dictionary of Music'; 'Oxford History of Music'; Pougin, 'Essai historique sur la musique en Russie' (Turin 1897); Riemann, H., 'Musik-Lexikon' (Leipzig 1909 and 1915).

**BALAKLAVA**, bä-lạ-klä'vạ, or **BALACLAVA**, Russia, a small seaport in the Crimea, eight miles south-southeast of Sebastopol. It consists for the most part of houses perched upon heights, and it has an old castle, built by the Genoese who were expelled in the 15th century by the Turks. On the acquisition of the Crimea by Catherine II of Russia it was made a military station. The harbor has a very narrow entrance, and, though deep, is not capacious. In 1854 Balaklava became the principal landing-place of the British after the battle of the Alma. The battle of Balaklava fought 25 Oct. 1854, when the Russians in overwhelming force were repulsed by a small body of British troops, is one of the most heroic achievements of modern times, the "charge of the light brigade" being the most glorious incident in the conflict. To-day, in spite of its harbor, the town has a population of only about 1,500, mostly Greek fishermen. The surrounding country is devoted to grape growing. Consult Kinglake, 'Invasion of the Crimea'; Paget, 'The Light Cavalry Brigade in the Crimea.'

**BALALAIKA**, or **Balaboika**, bä-lä-lī'kä, the national Russian musical instrument. It has the form of a three-stringed guitar, with a triangular sounding board and a finger-board, made generally of pine wood. Six almond-shaped holes on the surface of the sounding board, tending concentrically to form a star, resemble somewhat the *S*'s on the sound box of the violin. In accordance with the investigation of Professor Pyetuhov and Steinberg, made at the Imperial Conservatory of Music in Petrograd, the fundamental tone of the sounding board is C flat but as the instrument is made most frequently by unskilful hands it is extremely hard to standardize the fundamental tone as has been the case also with the violin. The first two strings are in unison and the third is their quint. W. W. Andreyev in recent years greatly improved the tone of the instrument and organized an orchestra of 30 of these

instruments, which he took on tours through Europe and America, meeting everywhere with great success.

**BALAMBAN,** bä-läm'bän, Philippine Islands, a small town on the west coast of Cebu, on Tanon Strait. It was occupied by a garrison of United States infantry after a battle with Filipino insurgents early in January 1900. It has a native population of some thousands, and a public school in which English is taught. It has a well-sheltered harbor, an active coast trade and a population of about 13,000.

**BALAN,** bą-lăn. (1) A French poem, an early version of 'Fierabras,' of which there was also an English version, 'The Sowdan of Babylon.' (2) The brother of Balin, in Arthurian legends.

**BALANCE** (Latin, *bis,* "twice," and *lanx,* a "dish," or "pan"), an instrument for determining the mass of a body by comparison with a series of other bodies (called "weights") whose masses are known. The term is often applied, though somewhat incorrectly, to the familiar instruments in which the weight of a body is determined by observing the extension that it can produce when acting upon a spring whose extensibility has been previously determined by direct experiments with known weights. The "spring balance" is useful in the ordinary affairs of life, where high precision is not essential; but it is seldom employed in accurate scientific work, since it is liable to errors that cannot be eliminated or allowed for — errors that are small enough to be neglected in commercial transactions, but quite intolerable in refined laboratory work.

The "lever balance" consists essentially of a lever (q.v.) having arms of known lengths. The mass to be determined is suspended at the extremity of one of the arms, and the known masses (or weights) are suspended from the extremity of the other one, their number and size being varied until, after repeated trials, a perfect equilibrium, or "balance," is attained. If the two arms of the lever are equal, the mass of the body under examination is then equal to the sum of the masses of the weights that are balanced against it. In many cases (for example, in the familiar "platform scales") the arms of the lever are intentionally made very unequal, the object to be weighed being suspended from the short arm of the lever, while the weights are suspended from the long arm. To determine the mass of the object it is then necessary to multiply the sum of the masses of the weights by the ratio of the long arm to the short one; but in practical work this calculation does not need to be performed, because the instrument is graduated by the maker so that all necessary allowance for the difference in the arms has been made, and the readings give the corrected mass directly. In many cases the balances (or "scales") used in commerce are constructed so that equilibrium is attained by varying the length of the lever-arm rather than by varying the load at the extremity of that arm; but the fundamental principles involved are the same in all cases, and are set forth in detail in the article LEVER (q.v.).

In the "precision balance" of the chemist and physicist, the lever (called the "beam") consists of a light but strong and rigid framework, usually made of brass or bronze, and having a shape somewhat like that shown in Fig. 1. It is supported by means of a wedge-shaped piece of steel, technically known as a "knife-edge," which is hardened and ground to a sharp and accurately straight edge, and which rests, when the balance is in use, upon a flat slab of agate, or other hard, smooth substance, in such a manner as to leave the beam free to tip one way or the other, with practically no frictional resistance. (The agate slab is sug-

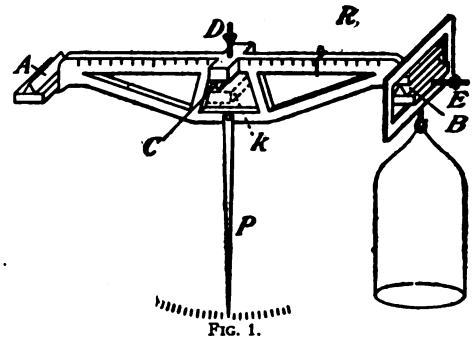


FIG. 1.

gested by the dotted contour, *k,* in the figure; the pillar that supports *k* being omitted for the sake of clearness). Knife-edges similar to the central one, but with their edges directed upward instead of downward, are provided at the respective ends of the beam (as shown at *A* and *B*) for the support of the pans (only one of which is shown) in which the masses to be compared are placed. The three knife-edges, *A, B* and *C,* must be made with great care, and must be set in position so that they shall be accurately parallel to one another. They must, moreover, have their edges all in the same plane, so that a straight line joining any two points in the edges of *A* and *B* will likewise pass through the edge of *C.* The two arms of the beam should also be precisely equal, so that *C* is exactly half way between *A* and *B.* *P* is a pointer whose free end travels over a graduated scale, so as to indicate the extent of the oscillations of the beam as it swings to and fro on the central knife-edge *C.* When the beam is horizontal, its centre of gravity (*G* in Fig. 2) should lie in the same

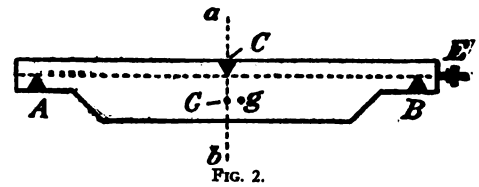


FIG. 2.

vertical line, *ab,* with the central knife-edge. Whether this condition is fulfilled or not is easily shown by removing the scalepans and allowing the beam to come to rest. It can only be in equilibrium when its centre of gravity is directly below the knife-edge *C;* so that if it comes to rest in a horizontal position it is evident that the condition specified above is sensibly realized. If, on the other hand, the beam, when freed from the pans, comes to rest

with its right-hand end lower than the left-hand one, it is evident that the centre of gravity of the beam is too far to the right, as is indicated by the point $g$. The better makes of balance are provided with an adjustment to correct an error of this sort. This adjustment may take the form of a fine screw-thread carrying a nut, as suggested at $E$. If the nut be caused to approach $B$, the centre of gravity of the beam (considering the nut as a part of the beam) will thereby be shifted toward the left, and after a number of trials the point $g$ may be made to coincide with $G$, so that the beam, when free from the pans, comes to rest in a perfectly horizontal position. If it does not remain horizontal when the pans are suspended in their proper places, then it follows that one of the pans is heavier than the other; this defect is easily remedied by the use of a light counterpoise in connection with the lighter pan, or by removing a small portion of the material of the heavier one.

The centre of gravity of the beam being properly adjusted, and the equality of the two pans being assured, it is evident that the beam will set itself in a horizontal position when the pans are empty. The balance may still be defective, however, through the arms not being of precisely equal length. The equality of the arms may be tested in the following manner: Let a mass, $P$, be placed in one of the pans, and suppose that $w$ is the mass that has to be placed in the other pan in order to secure a perfect balance. Let $L$ be the length of the arm from which $P$ is suspended, and $l$ be the length of the arm from which $w$ is suspended, as indicated in

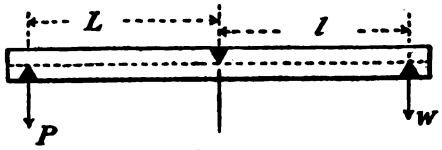



FIG. 3.

Fig. 3. Then, by the principle of the lever, we have —

$$P \times L = w \times l.$$

Next, let $P$ be placed in the other pan, connected with the arm whose length is $l$, and let $W$ be the mass that must be suspended from the arm of length $L$, in order to secure a perfect balance. We then have the equation —

$$P \times l = W \times l.$$

Now, if $P$ be eliminated between these two equations, we have the relation —

$$L \div l = \sqrt{w \div W};$$

and since $W$ and $w$ are both known, it follows that the ratio of the two arms of the balance is also known. If this ratio does not come out sensibly equal to unity, its value may be carefully determined, and allowance made for the inequality of the arms after a weighing has been performed. The effect of inequality in the arms may also be eliminated by a double weighing, such as has been supposed to be performed, above. For if we eliminate $L$ (instead of $P$) from the foregoing equations, we find —

$$P = \sqrt{W \times w};$$

that is, the true weight is the geometric mean between $W$ and $w$. In practice the arms of a good balance are so nearly equal that the simple arithmetic mean of $W$ and $w$ is a sufficiently close approximation to the geometric mean required by theory.

The sensitiveness of a balance depends largely upon the position of the centre of gravity of the beam relatively to the central knife-edge. Thus, if the arms of the balance are precisely equal, and the beam hangs perfectly horizontal with a weight $P$ in each pan, the angle $x$, through which the beam turns when the weight in the left-hand pan is increased to $P + p$, may be taken as a measure of the sensitiveness of the balance. Let $S$ be the weight of the beam itself, and let the centre of gravity of the beam be at a distance, $h$, below the central knife-edge when the beam is horizontal. Then, if $x$ is the angle that the beam makes with the horizontal when it comes to rest with $P + p$ in the left-hand pan and $P$ in the right-hand pan, the theory of the lever gives the equation (see Fig. 4)—

$$(P + p).L.\cos x = P.L.\cos x + h.S.\sin x,$$

from which we easily obtain —

$$\tan x = \frac{L \times p}{h \times S}.$$

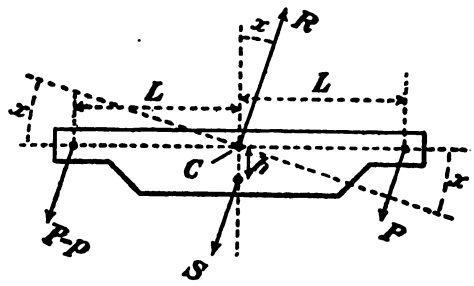



FIG. 4.

It is evident that $x$ will be increased as $h$ is decreased, so that the sensitiveness of the balance becomes greater the nearer the centre of gravity of the beam is caused to approach to the centre of support. The balance should be provided with a thread and nut, $D$ (see Fig. 1), to facilitate the vertical adjustment of the centre of gravity, in the same way that $E$ is used in adjusting the horizontal position of that point. The centre of gravity of the beam must always remain below the centre of support, because when it is above that point the beam is unstable, and when it coincides with the centre of support the instrument will remain in equilibrium in any position. When a balance is made very sensitive, by bringing the centre of gravity close to the point of support or by increasing the length of the arms of the beam, the period of oscillation of the beam grows very long, so that the instrument is tedious to use. The experienced chemist or physicist therefore selects a balance whose sensitiveness and period of oscillation can be best adapted to the work he has in hand.

The "precision balance" is a delicate instrument, and should be kept in a glass case, for protection, when not in actual use. The weighings are also performed with the balance enclosed in like manner, in order to avoid error from the effect of air-currents upon the beam. The knife-edges should be kept away from

their bearings, and provision is always made for raising the pans from the ends of the beam, and the beam itself from the central support, by means of a system of stops and levers (not here shown) actuated by a conveniently situated lever or wheel. The beam and pans should always be raised in this manner when changing the weights in the pans, in order to avoid giving the least shock to the knife-edges; for when these are dulled or otherwise injured the accuracy and sensitiveness of the balance are materially lessened.

Weighings may be effected by two general methods. In the first method the position of the pointer, $P$ (in Fig. 1), is noted on the scale at its extremity when the balance is at rest with the pans empty. The position so recorded is called the "zero" of the balance. The object to be weighed is then placed in one of the pans, and weights are added to the other pan until the balance will come to rest with its pointer at the same spot, or zero, as before. The weighing is then complete.

In the second method of conducting the experiment (known as the "method by oscillations") the balance is not brought to rest at all, the necessary readings being taken while the beam is oscillating. The zero reading of the pointer is first obtained (with the pans empty) in the following manner: The empty balance is allowed to oscillate freely for a short time, and then the position attained by the pointer at one of its extreme positions toward the right is noted. The reading of the next following extreme position to the left is then taken, and so on, observing the positions attained at the alternate right and left swings, just as the pointer pauses and begins to return toward the mean position. The last reading is taken on the same side as the first, so that there is an odd number of observations on one side of the zero, and an even number on the other side. The readings on the right are then averaged together, and those on the left are also averaged in the same way; after which the mean reading on the right is averaged with the mean reading on the left, and the result is taken as the position of the zero of the balance. The object to be weighed is then placed in one pan, and the weights in the other, the process of guess and trial being followed here just as in the preceding method until an almost exact balance has been attained. The method of oscillations, with alternate readings to the right and left, is next repeated in precisely the same manner as when the pans were empty, and the reading obtained by the final averaging of these observations is taken as the reading of the balance for the loads that are in the pans at the time. A very small weight is next added to one of the pans, and the oscillations are again observed, under the new conditions, precisely as before. The weight of the object under examination can then be determined by simple proportion. Thus, suppose that the original zero reading of the pointer, with the pans empty, was 11.6. The object to be weighed being placed in one pan, and weights having a combined mass of $W$ in the other, let the reading of the pointer (as deduced from the oscillations) be 10.4. The small mass, $w$, being then added to $W$, let the final reading of the pointer be 12.2. The following facts are now known: With empty pans the pointer reads 11.6. With the unknown mass (which may be denoted by $P$) in one pan, and a mass, $W$, in the other, the pointer reads 10.4. Finally, with $P$ in one pan and $W+w$ in the other, the pointer reads 12.2. The mass $w$ has displaced the reading of the pointer by 1.8 divisions. If it be assumed that a mass $x$, when added to $W$, would have made the reading of the pointer precisely 11.6, as it was with the empty pans, we have the additional fact that a mass $x$ would alter the reading of the pointer by 1.2 divisions. Hence the simple proportion —

$$x : w :: 1.2 : 1.8;$$

whence $x = \frac{2w}{3}$, and therefore the concluded mass of $P$ is $W + \frac{2w}{3}$.

The method of oscillations is favored by many physicists, in the belief that a better value of the zero of the balance can be obtained by studying the free swings in this way than by allowing the instrument to come to rest. Instead of adding very small weights to secure the last adjustments, the "rider" is often used. This consists of a tiny weight made of wire, and suspended on the beam of the balance, as indicated at $R$ in Fig. 1. The beam is graduated when a rider is to be used, and the final step in the weighing consists in observing what position the rider must have in order to make the balance perfect. The effect of moving the rider one division on the beam being known by previous experiment, the correction to be applied for any given position of the rider is easily calculated. Obviously the rider can be used with equal advantage whether the weighing is conducted by the method of oscillations or not.

The weights used in connection with precision balances must be accurately compared among themselves if refined work is to be done, and a table of corrections prepared, by means of which the proper allowances may be readily found, for any minute inconsistencies that may exist among them. Reference must be made to the standard works on experimental physics for the details of the process by which these corrections are obtained. Crookes' classical paper on the atomic weight of thallium' ('Philosophical Transactions' (1873, p. 277), may also be consulted with advantage, as it contains full details on this point, as well as on many others in connection with accurate weighing. (For further information on the theory and use of the precision balance consult Stewart & Gee, 'Lessons on Elementary Practical Physics' (Vol. I, London 1889); and Glazebrook & Shaw, 'Practical Physics' (New York 1893). Much advanced information may also be had in the 'Travaux et Mémoires' of the International Bureau of Weights and Measures). Consult also Braver, 'Die Construction der Waage' (3d ed., Leipzig 1906); Felgentraeger, 'Theorie, Konstruktion und Gebrauch der feineren Hebelwage' (Berlin 1907); Gerland and Traumüller, 'Geschichte der physikalischen Experimentirkunst'; Kohlrausch, 'Lehrbuch der pratiscschen Physik' (Leipzig 1905); Sokeland, "Ancient Desemers or Steelyards," in 'Smithsonian Annual Report for 1900' (Washington 1901). See also CHRONOMETER: INDUCTION BALANCE; TORSION BALANCE.

**BALANCE OF POWER**, is the system by which greater states are withheld from absorbing smaller ones. Vattel, in 'Law of Nations,' thus defines it: "By this balance is to be understood such a disposition of things, as that no one potentate or state shall be able absolutely to predominate and prescribe to the others." The system of the balance of power is entirely the outgrowth of the modern political system of Europe, as it began to shape itself in the 15th century; not that it was entirely unknown to the ancients before the irresistible progress of Roman arms put any idea of balance out of the question, but these early efforts after the balance of power were not sustained for a sufficiently long period, from generation to generation, from century to century. They were too transitory and casual to entitle them to be elevated into a system. They must be regarded as approaches and tentatives, interesting, but in the end fugitive and unsuccessful. During the latest centuries of the Middle Ages, the kings of France and the emperors of Germany were too much engaged in their domestic struggles with their great vassals to spare the concentrated attention and energy upon international affairs necessary to originate and sustain a system of balance in Christian Europe. In Italy, then so far in advance of the rest of Europe in intellectual, social, and political development, the princes, podestas and republics of that peninsula, from an early period of the 15th century, had built up the institution of an equilibrium for their mutual regulation. But this was too local and on too small a scale to be deemed the parent of our modern system. Not until Louis XI of France had repressed the dukes of Burgundy and Brittany; not until Ferdinand of Castile and Aragon had united almost the whole of modern Spain under his sway; not until Maximilian in Germany and Henry VII in England and Ireland had consolidated the monarchical authority, was the time ripe for the application of this idea. The invasion of Italy by Charles VIII of France, and his claim to the kingdom of Naples, in 1494 gave rise to the first great European combination of otherwise hostile powers for the repression of the ambition of one. Almost all the Italian states. Maximilian, the German Emperor, and Ferdinand of Aragon, suspended their animosities, and drove the French out of Italy. The Emperor Charles V of Germany, Spain, Burgundy, the Netherlands, and a vast transatlantic empire 1519–56, caused the jealousy of Europe. Francis I of France actually went so far as to ally himself with the Sultan, Solyman the Magnificent, against Charles. The Turks at one end of Europe, the kings of France and England at the other, and the opposition of the Protestant princes in the centre, prevented Charles from realizing his ambitious schemes. The misfortunes of Philip II, the son of Charles V, in the Dutch Netherlands and in the expeditions against England and the English power in Ireland, effectually dissipated the fears Europe entertained concerning the overgrown power of the Spanish branch of the house of Hapsburg. The idea of a European equilibrium had now become sufficiently definite for Henry IV of France to propose to Elizabeth of England, at the commencement of the 17th century, a scheme for a federative congress, whose purpose it should be to maintain the peace of Europe in the same manner as the great powers did until recently. The idea was impracticable in those days, and was entirely abandoned, even as a project, on the assassination of that liberal and high-minded prince. The next potentate whose power gave general alarm and caused a coalition against him in the general interest was the Emperor Ferdinand II of Germany (reigned 1619–37). Gustavus Adolphus, of Sweden, appealing to the Protestant princes of Germany, subsidized by Richelieu, the French minister, and supplied with men by England and the United Provinces of the Netherlands, achieved the task of humbling the power of the house of Austria. After the death of Gustavus, Oxenstiern of Sweden and Richelieu of France together forced upon the German Emperor the celebrated Treaty of Westphalia (1648), which relieved Europe from the fear of the house of Austria, and put an end to the Thirty Years' War. The next general danger came from France. The invasion by Louis of the Dutch Netherlands (1672) brought about a coalition of Holland, the Emperor of Germany, the Elector of Brandenburg and the King of Spain, against the French King. William, Prince of Orange, was the hero of this war; but the Peace of Nimeguen (1678) sealed the supremacy of Louis XIV. The will of the King of Spain nominating the second son of the French Dauphin as his successor (1700), thus putting the powerful monarchies of France and Spain into the same hands and utterly destroying the European equilibrium, created the grand alliance and the war of the Spanish succession. The Emperor of Germany, the Duke of Savoy, the King of England, and the States-General of the United Provinces, united in this grand alliance. The King of Portugal afterward joined the anti-French confederacy. Marlborough and Prince Eugene of Savoy were the great military leaders in behalf of the balance of power. The Peace of Utrecht (1713), by which the union of the French and Spanish crowns was prevented, and the territorial conquests of France almost wholly surrendered, re-established the influence of the equilibrium doctrine, and secured Europe from danger on this side until the era of the French republic. The Empress Elizabeth was the first Russian potentate who took part in wars in which she had only a remote general interest. Prussia and Russia celebrated their entry into the rank of first-class powers by dealing the most terrible blow to the balance of power which it has ever suffered. The first partition of Poland (1771–72) is admitted by every writer on this subject to be at war with the fundamental principles on which the equilibrium rests. The achievement of American independence (1783), though not generally reckoned by European writers as belonging to the history of the international balance, may well be included therein, inasmuch as it put a check to the growth of British colonial power and British naval preponderance. At the Congress of Vienna (1814–15), it was the leading wish of Lord Castlereagh, the British plenipotentiary, to restore the kingdom of Poland as included in the European equilibrium, in which he was seconded by Metternich for Austria and Talleyrand for the French legitimate sovereign, but opposed by the representatives of the Russian and Prussian monarchies. The return of Napoleon

from Elba put an end to this difference, and in the renewed conferences after the battle of Waterloo, the western powers did not insist upon the point. From 1815 to 1853, the world was substantially preserved from any war of importance by the five great powers who then presided over the destinies of Europe, namely, France, Great Britain, Russia, Austria and Prussia. In 1853, the invasion of the trans-Danubian provinces of the Turkish empire by a Russian army was declared by a congress of the great powers at Vienna to be a breach of the political equilibrium. In this declaration France, Great Britain, Austria and Prussia agreed. An Anglo-French alliance was made (1854) to repel the aggression, and the confederation of Turkey, Great Britain and France was reinforced by the King of Sardinia in the spring of the year 1855. After a war of three campaigns, the Treaty of Paris was signed (30 March 1856), by which Russia abandoned her claims, and the principle of the balance of power was anew vindicated. The Congress of Berlin in 1878, acting in the interests of the balance of power, deprived Russia of many benefits gained through the Treaty of San Stefano. Within a generation, the principle of nationalism has arisen in opposition to that of the balance of power. This is exhibited in United Italy, United Germany and the spread of the Pan-Slavism in Russia, but as a set-off to this may be mentioned the extension of European influence in Asia and Africa as regards colonization and trade. Thus the balance of power has become a world question and such nations as Germany and Italy are desirous of acquiring colonies to balance the colonial possessions of Russia and England. The sudden rise to power of the Slavic race as a result of the Balkan War in 1912–13 threatened seriously to complicate European policies regarding the maintenance of the balance of power, but when the disagreement among the Balkan States resulted in war among themselves the fears of a Slavic preponderance were seen to have been unwarranted. Numerous international conferences and congresses have been called for the purpose of maintaining the balance of power and these gatherings have set up and removed rulers, have decided boundary controversies, have settled political relations and have passed upon questions of international justice, often without even requesting the attendance or consulting the wishes of those most affected by their action. Consult Lawrence, T. J., 'International Law' (1910); Phillimore, R., 'International Law' (1879–88); Westlake, J., 'International Law' (Pt. I, 1908).

**BALANCE OF TRADE.** The so-called balance of trade is a theory arising from the apparent relation of exports to imports. The protectionist school of political economy holds that excess of exports over imports constitutes what is termed a "favorable balance," which must be returned to us in gold and silver, this being the profit to the nation on its foreign trade. According to this theory the one desirable thing in foreign commerce is the exportation of merchandise. It should be said that all protectionists do not share in a belief in this theory.

In a great measure and in its more exaggerated form, this doctrine is a survival of the old mercantile theory which down to the time of Adam Smith controlled most of the legislation relating to commerce, and which held that gold and silver were the only wealth. It still retains a firm hold on the popular mind, but it may be said that the full weight of the teachings of orthodox political economy is against the notion that excess of exports constitutes a favorable balance.

The argument of the latter is that if the theory is true there cannot be too great an excess of exports, and that our imports should therefore consist only of gold and silver. In this "reduction to absurdity" (since a country has no more need of an excessive supply of the metals than of any other commodity) the free-trade school of political economy rejects the conclusions based upon the apparent excess of exports over imports.

Opponents of the theory hold that such trade as exists between two countries, exclusive of what is paid as interest, rent or tribute, must show a mutual profit, and represent to each a corresponding excess of the value of importation. For illustration: A commodity costing in one country $75 will be bought in another for $100, in exchange for a commodity costing $75 in the country of its exportation and $100 in the importing country, such difference representing the degree of desirability of these particular commodities to each country. It will be observed that this precisely reverses the "balance of trade" theory.

Countries may be able to show a favorable balance from two causes, neither of which contributes to their prosperity. It may result from an actual drain, as in the case of Ireland, which used to be sapped of its wealth by absentee landlords, and in India, where the same phenomenon is caused by a similar drain in the form of tribute, official salaries spent outside the country, pensions, etc. But in these instances it is clear that there is a condition unprofitable to both countries. Or, on the other hand, it may result, as in the United States, which has the same favorable balance, by reason of the large sums annually paid as interest on loans that entered originally into railroad building, industrial improvements, etc. Most of the royal families of Europe, not to mention less exalted individuals, draw large dividends from American investments. Money spent by American tourists abroad helps to swell this favorable balance.

For proof that this theory has no such relation to national prosperity as its friends conceive, its opponents point to England, whose commercial greatness is rivalled by this country alone, and which has a prevailing "unfavorable" balance, because she has been the money-lender of the world, and her excess of imports represents the return received by her people for moneys invested in foreign lands.

It is impossible to account for the growing increase of our own export balance wholly on the explanation that such excess is rent or interest upon loans. Much of such excess is indeed fictitious, and is to be accounted for by undervaluation of imports and overvaluation of exports. In the latter case there is a strong inducement to overvalue, in order to conceal the fact that many of our exporters are selling goods cheaper abroad than at home. The in-

ducement to undervalue imports is quite as strong. In short, customs statistics, with every desire on the part of the Treasury Department to be accurate, are of necessity unreliable. See POLITICAL ECONOMY; FREE TRADE; PROTECTION. Consult Bastable, C. F., 'Theory of International Trade' (4th ed., 1903); Goschen, G. J., 'Theory of the Foreign Exchanges' (3d ed., 1896); Paish, George, 'Trade Balance of the United States' (in 'Reports' of the National Monetary Commission, Sen. Doc. 579, 1910).

**BALANCE SHEET.** See BOOKKEEPING.

**BALANCED BOWLDERS.** See ROCKING STONES.

**BALANCING OF ENGINES.** See APPLIED MECHANICS.

**BALANGA,** bą-lăn'gą, Philippine Islands, capital of the province of Bataan, on the island of Luzon, and on the west coast of Manila Bay, 34 miles northwest of Manila. The town is well built, contains a government house, city hall and prison. It is a telegraph station and owing to its shore location is a place of considerable importance. Pop. about 7,500.

**BALANOGLOS'SUS,** a worm-like marine animal, the chief representative of the most primitive class of chordate animals, *Enteropneusta* or *Adelocephala.* This remarkable creature, the type of its class, combines characters peculiar to itself, with features reminding us of the nemerteans, annelids, tunicates and the vertebrate omphioxus, while its free-swimming larva was originally supposed to be a young echinoderm. From the fact that the central nervous system lies above a notochord, Bateson placed it next to the vertebrates.

One American species, *Balanoglossus aurantiacus,* is a long, cylindrical, soft, fleshy worm, footless, without bristles, but with a large, soft, whitish tongue-shaped proboscis in front arising dorsally within the edge of the collar surrounding the mouth. The surface of the body is ciliated. At the beginning of the digestive canal is a series of sac-like folds of which the upper or dorsal portion is respiratory and separated by a constriction from the lower, which is digestive, and leads directly to the intestine behind. This pharyngeal respiratory portion of the digestive canal has on each side, in each segment, a dorsal sac, the two communicating along the median line of the body. The dorsal respiratory sacs each bear in their walls a delicate chitinous gill-support or arch. Between the gill-arches, forming numerous lamellæ, are a series of slits leading on each side to openings (spiracles) situated dorsally. The water passes through the mouth into each gill-sac, and out by the spiracles. The nervous system lies above a short sac regarded as a notochord. There is a dorsal blood vessel, which sends branches to the respiratory sacs, and a ventral vessel. The worm lives in sand at low-water mark from Cape Ann to Charleston, S. C., also in the Mediterranean.

The life-history of this worm is most interesting. The young, originally described under the name of *Tornaria,* was supposed to be an echinoderm larva, though it resembles the larval *Gephyrea* and *Annelida.* It is a transparent, surface-swimming, minute, ciliated, slender, somewhat bell-shaped form, with black eye-specks. When transforming to the worm condition, a pair of gills arise on sac-like outgrowths of the œsophagus, and afterward three additional pairs, with their external slits, arise, somewhat as in ascidians. The entire Tornaria directly transforms into the worm, the transitional period being very short. The body lengthens, the collar and proboscis develop, afterward the body lengthens, the end tapering and becoming much coiled. Consult Agassiz, A., 'The History of Balanoglossus and Tornaria' ('Memoirs of the American Academy of Arts and Sciences,' Vol. IX, Boston 1873); 'The Later Stages in the Development of Balanoglossus Kowalevskii, etc.' (*Quarterly Journal of the Microscopical Society,* London 1885–86).

**BALANUS** ("acorn-shells"), a genus of sessile cirripeds, family *Balanidæ,* of which colonies are to be found on rocks at low water, on submerged timbers, crustaceans, shells of mollusks, etc. They differ from barnacles in having a symmetrical shell and being destitute of a flexible stalk. The shell consists of six plates with an operculum of four valves. They pass through a larval state in which they are not fixed, moving by means of swimming-feet which disappear in the final state. All the *Balanidæ* are hermaphrodites. A South American species (*B. psittacus*) is eaten on the coast of Chile, the *B. tintinnabulum* by the Chinese. The old Roman epicures esteemed the larger species.

**BALAO,** bą-lā'ō, a West Indian name, among Spanish-speaking fishermen, for the half-beaks.

**BALARD,** ba-lär', **Antoine Jerome,** French chemist: b. Montpellier 1802; d. Paris 1876. He was professor of chemistry at the Collège de France, Paris, and discoverer of bromine; also of a process of extracting sulphate of soda directly from sea-water. In 1868 he was made Inspector-General of Superior Instruction.

**BALAS RUBY,** a variety of ruby spinel.

**BALASHOV,** băl-ą-shōf', Russia, a town in the government of Saratov, situated on the Don, 170 miles west of the city of Saratov. It has a considerable export trade of grain, etc. Pop. about 13,000.

**BALASORE,** băl-ą-sōr', India, a city of Bengal, capital of the district of Balasore. It is situated near the coast and has dry docks and a considerable coasting trade which consists principally of exports of rice and salt, and imports of oil, metal and cloth. The town has been the seat, successively, of Portuguese, Dutch and Danish factories. In 1846 the Danes sold their interest in the place to the English. Pop. (1911) 21,363.

**BALATA,** băl'a-ta, a rubber-like exudate derived from the milky juice of *Mimusops balata* and *M. schomburgkii.* The gum is used widely in the arts, and is sometimes confused with gum chicle, from which much of the chewing-gum of commerce is derived.

**BALATE,** bą-lā'tą, the Philippine name for a kind of trepang (*Holothuria atra*).

**BALATON,** bŏ'lŏ-tŏn, or **PLATTEN SEE,** a lake in the southwest of Hungary, 55 miles southwest of Budapest, extending from lat. 46° 45′ to 47° 5′ N., and from long. 17° 14′

to 18° 10′ E.; area about 400 square miles, including the marshy shores. It receives the waters of more than 30 small streams. It discharges through the Kapos River, the Kapos Canal and the Sio, which empties into the Sarviz, an affluent of the Danube. The Balaton is constantly in a state of motion, sufficient to cause waves. Its waters are perfectly transparent and abound with fine fish, notably one called *fogas*, a variety of perch frequently 20 pounds in weight, and with delicious flesh of snowy whiteness. Another kind, resembling the herring, swarm in the lake during the winter in such shoals that fishermen sometimes haul 50 cartloads from under the ice in a single day. The northern bank is bounded by vine-clad hills, and the southern bank is low. The average depth of the lake is about 25 feet, although a depth of over 100 feet is found near Tihany. It is the largest lake in Hungary.

**BALAUANG,** bä-lou-äng′, Philippines, a town in the province of La Unión, Luzon, north of San Fernando.

**BALAU'STION'S ADVENTURES,** a poem by Robert Browning, describing a Greek girl of Rhodes. 'Aristophanes' Apology' is a continuation of this poem.

**BALAWAT,** bä-la-wät′, Turkey-in-Asia, a ruined city 10 miles from Nimrud. It is the site of the ancient Imgur Bel, a fortified place built by Asurnazirpal II (885–860 B.C.) and his son, Shalmaneser II (860–825 B.C.). The latter began the construction of a fine palace which was completed by his successor. Excavations there have resulted in the finding of the ruins of the palace of Shalmaneser II. The bronze gates that opened into the vestibule of this palace are especially interesting and valuable, and have been placed in the British Museum.

**BALAYAN,** bą-lā′yan, Philippines, a town of Batangas province, Luzon, situated on the Gulf of Balavan, 30 miles northwest of the town of Batangas. It has a good harbor, and vessels have made the town a base of supplies. The inhabitants are engaged in fishing, cattle raising, agriculture and coast trade. Pop. about 25,000.

**BALBEC.** See BAALBEK.

**BALBI,** bäl′bē, **Adriano,** famous geographer: b. Venice, 25 April 1782; d. Padua, 14 March 1848. In 1808 his first work on geography ,procured his appointment as professor of that science in the College of San Michele, at Omrano, and in 1811 he became professor of natural philosophy in the Lyceum at Farino. He went in 1820 to Portugal, where he had free access to the government archives, and from the documents he collected composed two interesting works entitled 'Essai Statistique sur le Royaume de Portugal et d'Algarve,' and 'Variétés Politiques et Statistiques de la Monarchie Portugaise,' which he published at Paris in 1822. Four years later he produced the first part of his 'Atlas Ethnographique du Globe,' a work of superior arrangement, in which he spread before the French public the result of the researches and disquisitions of the German philologists. He published afterward, in concert with several scientific men, statistical tables of Russia, France, the Netherlands; and 'Abrégé de Géographie,' a summary of geographical science which appeared in 1832 and was translated into nearly all the European languages. His works show a great amount of knowledge, thorough research and skilful arrangement of material; but being utterly deficient in style, they are heavy and of difficult reading; however, they may always be advantageously and safely consulted.

**BALBI, Gasparo,** Venetian dealer in precious stones, who lived in 16th century. He traveled first to Aleppo and thence down the Euphrates and Tigris to the Malabar coast, sailing finally for Pegu, where he remained two years. His 'Viaggio all' Indie Orientali,' published after his return to Venice in 1590, contains the earliest account of India beyond the Ganges. He is on the whole very reliable in his accounts of what came under his own observation; but there appears to have been no limit to his credulity at second-hand.

**BALBI, Giovanni,** called DE JANUA or JANUENSIS, from his birthplace, Genoa, a Dominican friar, who lived toward the end of the 13th century. He composed a kind of encyclopedia, which he called the 'Catholicon.' This book owes its celebrity principally to the fact that it has become one of the earliest monuments of the art of printing. The original edition is to be found under the title, 'Summa Grammaticalis valde Notabilis quœ Catholicon Nominatur' (Moguntiæ, per Johannem Faustum, 1460, fol.). It was reprinted at Augsburg, 1469 and 1472, by Schoeffer; at Nuremberg, 1483, by Koburger; at Venice, 1487, revised and improved, by Pietro Gilles.

**BALBINUS, Decimus Cælius,** Roman senator and poet. After the death of the two Gordiani, killed by the soldiers of Maximinus, he was elected emperor by the Senate, concurrently with Clodius Pupienus Maximus, in opposition to the usurper Maximinus. The two emperors reigned little more than one year, and were assassinated by their soldiers 238 A.D.

**BALBO,** bäl′bō, **Cesare,** COUNT, Italian statesman and author: b. Turin, 21 Nov. 1789; d. 3 June 1853. Through the favor of the Emperor he served in various capacities under the Napoleonic empire. After the downfall of Napoleon became secretary of the Sardinian Ambassador in London until the outbreak of the Sardinian revolution in 1821, when he returned to his native town in order to devote himself to literary pursuits. His reputation was not firmly established, however, until the year 1821, when his 'Speranze d'Italia' made its appearance. His appeal in favor of national independence found a powerful echo in the popular heart, and paved the way for the revolution in which he was destined to play a prominent part as a champion of the Moderate party. His next work, 'History of Italy, from the Beginning to 1814' (Bastia 1849), was not only inspired by the same patriotic spirit, but also distinguished by historical merit. But although in 1848 and 1849 he had strenuously opposed the Democratic party and unwaveringly adhered to a more conservative policy, he threw the entire weight of his political influence into the scale of patriotism as soon as the war against Austria began. He supported the different cabinets which governed Sardinia after the promulgation of the Constitution of 4 March 1848, and, though for a very short time, was president of the first.

He was ardently attached to the house of Savoy; but the resurrected Italy for which he yearned was a kind of theocracy under the papal supremacy. His select works, edited by F. Nicolini, began issuing at Bari in 1913. Consult the 'Lives' by Ricotti (1856) and Vismara (1882).

**BALBOA,** băl-bō'ą, **Vasco Nuñez,** the discoverer of the Pacific Ocean: b. Jerez de los Caballeros, Spain, 1475; d. 1517. At the age of 25 he went to America to seek his fortune, joining the expedition of Rodrigo de Bastidas (see CENTRAL AMERICA), and returned to Española (Haiti), after exploring with Bastidas a part of the southwestern coast of the Caribbean Sea. At the town of Salvatierra in Española he became a planter, but with such indifferent success that, when he resolved to attach himself to Alonzo de Ojeda's new colony on the mainland of South America, he found difficulty in escaping from his creditors. To elude their vigilance, he hid in a large cask, and thus was carried from his plantation to the landing, and thence on board one of Ojeda's vessels, as a part of the cargo. It is probable that when he emerged from his place of concealment he would have been handed over to the authorities on shore if the expedition had not stood in need of every available fighting-man. Admitted to membership reluctantly, and as a common soldier, Balboa showed his talent for leadership when the undertaking seemed on the point of failure. He suggested transferring the colony to Darien, describing the more favorable conditions there, as he had seen them on his previous voyage. His advice was taken, and the name Antigua (Santa Maria de la Antigua del Darien) was given to the new settlement. Here the Spaniards were somewhat more successful and Balboa assumed command.

In the year 1513 he received a letter from a commissioner whom he had sent to Spain, informing him that he might expect to be summoned to court to answer grave charges. Resolving to win back the royal favor by some striking service, he selected 190 men, the best of his soldiers, and with these and 1,000 native warriors and carriers, and a pack of bloodhounds, sailed from Antigua, 1 Sept. 1513, following the Darien coast westward until he reached a point opposite the Gulf of San Miguel. This gulf extends far into the south coast from the Pacific, narrowing the isthmus to a width of 50 miles. Accurate information in regard to the southern coast, the ocean that lay beyond, and the superior civilization of the Incas of Peru, whose country was to be reached by way of this ocean, had been obtained from the Indians, especially through Balboa's favorite Indian mistress, Fulvia.

The march began 6 September. On the 24th reaching an elevated plateau, the Spaniards repulsed an attack by 1,000 Indians and found supplies in the village of Quarequá. The following day, 25 Sept. 1513, Balboa gained the summit of a mountain from which the waters of Mar del Sur (southern sea) were visible. The name, Pacific, was not applied to this ocean until seven years later, when it was bestowed by Magellan. On 29 September Balboa took formal possession of the "Southern Sea" by marching into the water, and, in the names of the King and Queen of Castile, claiming "these seas and lands."

The warning received from the Spanish court was justified in the event. Balboa had already been superseded by Pedro Arias Dávila (Pedrarias). The reward of the former was an empty title of Adelantado del Mar del Sur, and the appointment as Governor of Panama, Coyba and the lands of the Southern Sea (the Pacific) which he had discovered; while on shore he was made the subordinate of his rival and bitter enemy, Governor Pedrarias. He led many successful expeditions, but these only aroused the jealousy and hatred of Pedrarias Dávila. The Spanish government tried in vain to mediate between them and Balboa's marriage with the daughter of Pedrarias was arranged; but on an occasion of dispute which arose, Balboa was induced to deliver himself up, was accused of rebellion and on the trumped-up evidence of Garabito, a false friend, was convicted and beheaded.

MARRION WILCOX.

**BALBRIGGAN,** Ireland, a watering place in County Dublin, 21 miles north of Dublin. It is a seat of linen, cotton, calico and stocking manufactures. The cotton stockings made here are remarkable for fineness of texture and beauty of open work. Many women are employed in embroidering muslin.

**BALBUS, Lucius Cornelius,** Roman officer, sometimes surnamed MAJOR, to distinguish him from his nephew (see below); b. Gades, Iberia, in the 1st century B.C. He served his first campaign under Q. Metellus Pius and Pompey. For his conduct in this war the privileges of a Roman citizen were conferred on him, his brother and his nephews. In 72 B.C. Balbus removed to Rome, and soon became an intimate friend of Cæsar. He was consul in 40 B.C., and is supposed to have been the first adopted citizen to fill that office. He wrote a diary in which he described the chief events in his own and Cæsar's life.

**BALBUS, Lucius Cornelius** (MINOR), nephew of the above, a Roman officer, who in acknowledgement of a victory gained in Africa was awarded the honor of a triumph, the first ever paid to one not born in Rome.

**BALCH, Emily Greene,** American economist and author: b. Jamaica Plain, Mass., 8 Jan. 1867. She was graduated at Bryn Mawr in 1889, and in 1890–91 studied political economy in Paris, later she took special work at the University of Chicago, and at Berlin in 1895–96. She was connected with Denison House, a college settlement in Boston, and was active also in child welfare work. She became connected with the economics department of Wellesley College in 1896, and was appointed professor of political economy and political and social science in 1913. She was a member of the Massachusetts State Commission on Industrial Education 1908–09, member of the State Commission on Immigration 1913–14, and member of the city planning board of Boston since 1914. In 1915 she was a delegate to the International Congress of Women at The Hague, and delegate from this Congress to the Scandinavian and Russian governments. She has published 'Public Assistance of the Poor in France' (1893); 'Our Slavic Fellow-Citizens' (1910); 'Women at The Hague' (1915).

**BALCH, George Beall,** American rear-admiral: b. Tennessee, 3 Jan. 1821; d. 16 April 1908. Appointed to the navy 1837, he was promoted passed midshipman 1843, and served through the Mexican War. He was with Commodore Conner's squadron in the first attack on Alvarado, with the mosquito fleet under Commodore Tatnall, and at the bombardment and surrender of Vera Cruz. As a lieutenant on the *Plymouth* he was with the Asiatic squadron 1851–55, and received a wound in a fight between the rebels and imperialists at Shanghai. During the Civil War he commanded the *Pocahontas* and *Pawnee,* taking part in numerous engagements with the Confederate batteries, chiefly in South Carolina. He became captain, 25 July 1866; commodore, 13 Aug. 1872; rear-admiral, 5 June 1878; and retired in 1883.

**BALCH, Thomas Willing,** American lawyer: b. Philadelphia about 1870. He was graduated at Harvard in 1890, and from the law school of the University of Pennsylvania in 1895, and has since practised his profession in Philadelphia. He has written much on international law, including 'Some Facts about Alsace and Lorraine' (1895); 'The Alabama Arbitration' (1900); 'The Alaska-Canadian Frontier' (1902); 'The Alaska Frontier' (1903); 'L'évolution de l'arbitrage internationale' (1908); 'La question des pêcheries de l'Atlantique' (1909); 'The Arctic and Antarctic Regions and the Law of Nations' (1910); 'La baie d'Hudson, est-elle une mer libre on une mer fermée?' (1911, Eng. trans., 1912). He is a member of the International Law Association, the American Philosophical Society, the American Antiquarian Society, etc.

**BALCONY,** a gallery or framework of wood, iron or stone, projecting from the front of a house, generally on a level with the floors of rooms, and supported on cantilevers or brackets, and sometimes on columns of wood or stone. Balconies are often surrounded by iron railings or stone balustrades. The etymology of the word has been frequently traced to the Greek *βαλλειν,* to throw. This rests upon the presumption that balconies were built originally for purposes of defense, the enemy being attacked with missiles thrown upon him from the balcony. The Latin word is *balcus* or *palcus,* the Italian *balcone,* also *balco* or *palco,* the Turkish *bala-khanch,* the German *balcon.* The use of balconies is comparatively modern, although there is no doubt about their existence in times of antiquity. Winckelmann, the German art writer, refers to the fact that in Greece every private dwelling-house had contrivances which, although then designated under different terms, would be called balconies in our day. In Spain, Italy and South America, they are used for sitting, walking and chatting, in warm summer evenings; but they are less common in northern countries, where the nature of the climate does not call for such romantic contrivances. They are, however, often used as miniature gardens for potted plants. Upon Boccaccio and Bandello, the great Italian novelists of the 16th century, the poetical utility of balconies was not lost, and entertaining balcony scenes abound in their stories. Shakespeare took his plot of Romeo and Juliet from one of Bandello's novels, and the balcony scene exhibits, with that power of genius of which the great English dramatist alone was capable, the beauty of a balcony when two young lovers like Juliet and Romeo make it the scene of their passion.

In modern theatres the term is applied to the first or second gallery or tier of seats above the pit.

**BALD CYPRESS.** See CYPRESS.

**BALD EAGLE,** the American white-headed eagle. See EAGLE.

**BALD MOUNTAIN,** the name of several eminences in the United States, of which the following are the principal: (1) In Colorado, height, 11,493 feet; (2) in California, 8,295 feet; (3) in Utah, 11,975 feet; (4) in Wyoming, in the Wind River Range, 10,760 feet; and (5) in North Carolina, 5,550 feet. The last named was the cause of much excitement in May 1878, because of inexplicable rumblings which lasted for about two weeks. The mountain shook as if in the throes of an earthquake, immense trees and rocks were hurled down its sides, and for a time fears were entertained lest a volcanic eruption should follow. A subsequent examination showed that a large section of the mountain had been split asunder, but no further disturbance occurred.

**BALDACHIN,** băl'dą-chĭn, originally the rich silks and brocades in the form of a canopy or umbrella-like covering, such as were used in the East over the heads of dignitaries on ceremonial occasions. The word itself is derived from *baldacco,* the Italian name of Bagdad, where the fabrics were manufactured. The baldachin was in general use among the Byzantine and Mohammedan rulers and their higher functionaries, and were introduced into Europe through the Crusades and also through the commerce of Italy with Constantinople and the near East. The canopy was supported on four poles and was carried over the heads of civil and religious dignitaries in all processions. It is still used in the processions of the Catholic and Greek Churches. Later the baldachin became a fixed covering in royal throne rooms and in papal and episcopal halls, and over episcopal thrones in cathedrals, and since the Renaissance the term has been applied to permanent structures of marble or metal over altars, tombs, etc. A famous example is the bronze baldachin by Bernini over the high altar of Saint Peter's in Rome. A copy of this may be seen over the altar of the Cathedral of Saint Jacques, Montreal, Canada. In these the draped canopies are imitated in the metal, thus distinguishing the baldachin from the ciborium, in which the treatment is purely architectural.

**BALDE, Jakob,** bäl'dā, yä'cōb, German Latin poet: b. Ensisheim, Alsace, 1604; d. Neuburg, on the Danube, 1668. He entered the Jesuit order in 1624, was court-chaplain to the Prince Elector of Bavaria, Maximilian I (1638), afterward (1654) in a similar capacity at Neuburg. He distinguished himself by the excellence of his Latin poetry. Herder called attention to the beauty and genius of his lyrical productions, many of which he translated. Consult biographies by J. Bach (Freiburg 1904) and G. Eitner (Breslau 1863).

**BALDER,** bâl'dėr, or **BALDUR,** in Norse mythology a divinity, represented as the son of

Odin and Frigga, beautiful, wise, amiable and beloved by all the gods. His mother took an oath from every creature, and even from every inanimate object, that they would not harm Balder, but omitted the mistletoe. Balder was therefore deemed invulnerable, and the other gods in sport flung stones and shot arrows at him without harming him. But the evil god, Loki, fashioned an arrow from the mistletoe and got Balder's blind brother Höder to shoot it, himself guiding his aim. Balder fell dead, pierced to the heart, to the deep grief of all the gods. He is believed to be a personification of the brightness and beneficence of the sun.

**BALDERSTONE,** bâl'dẽr-stōn, **Caleb,** the old butler of the master of Ravenswood, in Scott's 'Bride of Lammermoor.'

**BALDI,** bäl'dē, **Benardino,** Italian scholar and poet: b. 1553; d. 1617. He was an accomplished linguist and a very prolific writer, and was abbot of Guastalla for 25 years. Among his numerous works are 'Cronica dei Matematici'; 'La Nautica,' a poem on navigation; an Arabic grammar; and a translation of the 'Targum of Onkelos.'

**BALDNESS.** Under the title ALOPECIA the general types of baldness have been considered. Premature alopecia, or the general affection of the young and middle-aged, deserves greater consideration. *Alopecia presenilis,* or premature baldness, is recognized as of two distinct varieties, the idiopathic and the symptomatic. In the idiopathic variety that occurs before the age of 45 there does not seem to be any disease of the scalp or of the general nutrition to explain it. It is a gradual and progressive loss of hair, thinner and thinner hairs replacing those that have fallen out, until the follicle will not produce hair. It is usually symmetrical, beginning at the tonsure or running back from the temples. The skin is usually left thin and hard.

In the symptomatic form some general disorder or a definite disease of the scalp is the cause. This latter is usually a scaly dandruff; the general causes may be syphilis, tuberculosis, fevers or local destructive conditions. Dandruff is the most frequent accompaniment and cause of baldness. Dandruff is really at least three different diseases of the skin, but the general character is that of a general seborrheal dermatitis; that is, a mild inflammation with excessive fatty secretions. This is frequently due to digestive disturbances, and is closely dependent upon the general health of the entire body. The hair falls out as in the idiopathic form. The dandruff usually continues until the hair is gone, and then ceases, Treatment should be begun early, particularly in those whose families have tended to baldness. The details of treatment require professional advice. The large number of hair-tonics in the market speaks well for the general inutility of all of them. Cleanliness, frequent dry-brushings, and shampoos once in every two or three weeks, are safe measures, and tend to keep up the general hygiene of the scalp. Chloral, ointment of mercury, cantharides, sulphur, tar and resorcin are successful in some cases in checking baldness. Consult Jackson, 'Diseases of the Skin' (1900); Jackson and McMurty, 'A Treatise on Diseases of the Hair' (Philadelphia 1912); Joseph, 'Lehrbuch der haarkrankheiten' (Leipzig 1910). See DANDRUFF.

**BALDO, Monte,** a mountain group 45 miles in length, on the borders of south Tyrol and the province of Verona, and separating the lake of Garda from the valley of the Adige. Altissimo di Nago (6,970 feet), commanding an extensive panorama comprising a great part of north Italy, and Monte Maggiore (7,280 feet) are the principal peaks.

**BALDOVINETTI,** bäl'dō-vē-nĕt'tē, **Alessio,** Florentine artist: b. 1427; d. 1499. Few of his works remain except a 'Nativity' in the Church of the Annunziata, and two altar-pieces in the gallery of the Uffizi and the Academy of Arts, Florence. One of the masters of the early Florentine Renaissance, he painted his landscapes with meticulous care; but his figure painting is somewhat mechanical. He did excellent work in the restoration of mosaics. He spent 16 years in painting the frescoes in the Church of Santa Trinitá; but these suffered destruction in 1700. Consult biographies by Pierotti (Lucca 1868) and Londi (Florence 1907).

**BALDPATE,** or **BALDHEAD,** the name of several different birds having a white head, as an eagle, one of the widgeons, a kind of domestic pigeon, a West Indian dove, a fruit-crow, etc.

**BALDRIC,** bâl'drĭk, a belt or sash worn over the right or left shoulder diagonally across the body, often highly decorated and enriched with gems, and used not only to sustain the sword, dagger or horn, but also for purposes of ornament and as a military or heraldic symbol. The fashion of wearing a baldric appears to have reached its height in the 15th century. In the United States it now forms a part of the uniform of Knights Templar and other fraternal organizations, though it is still in use in European royal courts to indicate certain orders.

**BALDUCCI,** bäl-dō'chē, **Francesco,** leading Italian Anacreontic poet: b. Palermo; d. Rome 1642. He wrote 'Sicilian Songs' in the Sicilian dialect, etc.

**BALDUNG,** bäl'dung, **Hans,** or **Hans Grün,** German painter and wood engraver: b. Suabia 1470; d. Strasburg 1522. His work, though inferior to Dürer's, possessed many of the same characteristics, and on this account he has been sometimes considered a pupil of the Nuremberg master. His principal paintings are the series of panels (of the date of 1516) over the altar in Freiburg Cathedral; others of his works are to be found at Berlin, Colmar and Basel. His numerous and often fantastic engravings have the monogram H. and B., with a small G. in the centre of the H.

**BALDWIN,** the name of several members of the house of Flanders, who reigned as kings of Jerusalem during the period of the Crusades. BALDWIN I: b. 1058; d. Egypt 1118. He became King of Jerusalem in 1100. He was a brother of Godfrey of Bouillon, took part in the 1st crusade, retired to Edessa at the request of its Christian inhabitants, and became soon after Count of Edessa. He was defeated by a force from Egypt in 1102, and made some conquests, including Acre, Cæsarea and Sidon. BALDWIN II ("du Bourg"): d. 21 Aug. 1131. He was a

cousin of Baldwin I, whom he succeeded as Count of Edessa, and in 1118 as King of Jerusalem. He reigned until 1131. He took Tyre in 1124, with the aid of the Venetians. He was captured by the Turks, who held him captive for six months. He resigned the crown before his death to his son-in-law, Fulk of Anjou, who reigned until 1142. BALDWIN III: b. 1129; d. Syria, 10 Feb. 1162. He was the son of Fulk of Anjou, whom he succeeded as King of Jerusalem in 1142. Tradition regards him as a model of crusading chivalry. Edessa was lost during his reign. He inflicted several defeats on Nureddin, Sultan of Aleppo. He was held in high esteem even by his enemies and it is said that Saracens served under him. He sought to improve the external and internal defenses of his kingdom, which attained its highest power during his reign. His Queen was Theodora, daughter of the Greek Emperor Manuel. He was succeeded by his brother Amalric, who died in 1173. BALDWIN IV ("the Leper"), the son and successor of Amalric, reigned until 1183. Raymond, Count of Tripoli, governed the kingdom for him, as he was leprous. BALDWIN V, the son of Sibylla, sister of Baldwin IV, was called to the throne at the age of five. He died in 1186, and Jerusalem was taken by Saladin the following year. See CRUSADES and consult the works there referred to. Consult also Cox, 'History of the Crusades' (New York 1889), and Gibbon, Edward, 'Decline and Fall of the Roman Empire.'

**BALDWIN I,** the first Latin Emperor of Constantinople, son of Baldwin VIII, Count of Flanders and Hainault: b. Valenciennes 1170. In 1200 he joined the Crusaders with his brother, Thierry, and in 1202 aided the Venetians in their attack upon Constantinople, of which city he was crowned emperor 9 May 1204. Next year a revolt took place, the Greeks captured Adrianople, and Baldwin was taken prisoner by the King of Bulgaria, dying, it is said, in captivity in 1206. He was much esteemed by the Greeks for his charity, temperance and justice.

**BALDWIN II,** the last Frank Emperor of Constantinople: b. 1217; d. 1273. He was the son of Pierre de Courtenay, and succeeded his brother Robert in 1228. He was twice besieged in his imperial city, and, being too weak to defend his dominions, repaired to Italy to seek aid from the Pope. At the court of France Baldwin was favorably received by the King, Saint Louis, to whom he presented a crown of thorns which was held by all Christendom to be the genuine relic. Baldwin in 1239 set out for Constantinople with a body of Crusaders, who, however, soon quitted him and took the route to Palestine. He succeeded, ultimately, in raising new forces in the west, and regained his capital; but in 1261 one of the generals of Michael Palæologus, ruler of Nicæa, invested it and entered Constantinople on the 29th of July. Baldwin fled to Sicily, where he died in obscurity. With him terminated the Latin empire in the east.

**BALDWIN, Abraham,** American statesman: b. Guilford, Conn., 6 Nov. 1754; d. 1807. He was graduated at Yale 1772, and was tutor there, 1775–79. During the American Revolution he was a chaplain in the army and, at the suggestion of General Greene, settled in Savannah, Ga., 1784, where he was admitted to the bar. His efforts as a member of the legislature secured a charter and endowment for the University of Georgia, which was established according to his own plans and ideas, and of which he became president (1786–1801). He took part in the Constitutional Convention of 1787; was a delegate to the Continental Congress 1785–88; member of the House of Representatives 1789–99; United States senator 1799, until his death.

**BALDWIN, Charles H.,** American naval officer: b. New York city, 3 Sept. 1822; d. 17 Nov. 1888. He entered the navy as a midshipman in 1839. Serving on the frigate *Congress* during the war with Mexico, he figured in several sharp encounters near Mazatlan. He commanded the steamer *Clifton* at the passage of Forts Jackson and Saint Philip in 1862, and at the first attack on Vicksburg. He became rear-admiral in 1883 in command of the Mediterranean squadron, and retired in 1884.

**BALDWIN, Charles Sears,** American author and educator: b. New York, 21 March 1867. He was graduated at Columbia University in 1888. He was assistant tutor and instructor in English at Columbia 1891–94, instructor in rhetoric 1895. In 1895–98 he was instructor in rhetoric at Yale, assistant professor 1898–1909 and professor in 1910–11, when he returned to Columbia as professor of rhetoric and English composition. He has published 'The Inflections and Syntax of the Morte d'Arthur of Sir Thomas Malory' (1894); 'Specimens of Prose Description' (1895); 'De Quincey's Revolt of the Tartars' (1896); 'The Expository Paragraph and Sentence' (1897); 'A College Manual of Rhetoric' (1902; 4th ed. rev., 1905); 'American Short Stories' (1904; Ger. ed., 1911); 'How to Write, a Handbook Based on the English Bible' (1905); 'Bunyan's Pilgrim's Progress' (1905); 'De Quincey's Joan of Arc and English Mail Coach' (1906); 'Essays out of Hours' (1907); 'Writing and Speaking' (1909); 'Composition, Oral and Written' (1909); 'Introduction to English Medieval Literature' (1913), also essays and reviews.

**BALDWIN, Evelyn Briggs,** Arctic explorer: b. Springfield, Mo., 22 July 1862. He was graduated from Northwestern College, Naperville, Ill., and engaged chiefly in teaching until 1892, when he entered the United States Weather Bureau service. He is now an inspector-at-large of the signal corps of the United States army. He accompanied, as meteorologist, Peary's North Greenland expedition 1893–94; joined the Wellman Polar expedition, 1898–99, as second in command, built Fort McKinley, and discovered Graham Bell Land. Securing the co-operation of Mr. William Ziegler of New York he organized and commanded the Baldwin-Ziegler expedition of 1901 for the discovery of the North Pole. The expedition reached Franz-Joseph Land and after depositing several caches of provisions returned in 1902. He has written 'The Search for the North Pole,' 'Auroral Observations, Franz-Joseph Land,' 'Meteorological Reports of the North Greenland Expedition' (1893–94), and meteorological publications in government reports.

**BALDWIN, Frank Dwight,** major-general United States army: b. Manchester, Mich.,

26 June 1842. He entered the United States volunteer army as second lieutenant of Michigan horse guards, 19 Sept. 1861, engaging at this time upon a long and brilliant military career, in the course of which he served in many battles of the Civil War and was prominent in the long-continued Indian troubles which followed later. He was brevetted captain for gallantry against Indians in Texas, 30 Aug. 1874; and in 1899 was promoted lieutenant-colonel, 4th infantry. From this period he was continually engaged in guerilla warfare in the Philippines until relieved from further duty 22 Feb. 1903, and transferred to command of the department of the Colorado. He was retired from active service 26 June 1906 by operation of law, at which time he was in command of southwestern military division with headquarters at Oklahoma City, Okla. He was nominated major-general United States army (retired), 4 March 1915. He received the degree of LL.D. from Hillsdale College, Michigan.

**BALDWIN, James,** American author and educator: b. Westfield, Ind., 15 Dec. 1841. Largely self-taught, Hon. Ph.D., De Pauw University, 1884. Began teaching in 1865 and was 18 years superintendent of city graded schools in Indiana. He filled an editorial position with Harper & Bros., New York (1887–93), when he became editor of schoolbooks for the American Book Company. He wrote 'The Story of Siegfried' (1882); 'The Book Lover' (1884); 'Old Greek Stories' (1895); 'The Horse Fair' (1896); 'Discovery of the Old Northwest' (1901); 'The Sampo' (1912); and more than 50 other volumes. His books are known and read in every part of the world and are used in the schools of China, Japan and the Philippines, many million copies having been sold. More than half of the school readers used in the United States were produced under his editorship, or were written by him.

**BALDWIN, James Mark,** American psychologist and philosopher: b. Columbia, S. C., 12 Jan. 1861. He studied at the universities of Princeton, Leipzig, Berlin and Tübingen; was instructor of German and French (1886–87); professor of philosophy in Lake Forest University (1887–89) and in the University of Toronto (1889–93); professor of psychology (1893–1903); Johns Hopkins (1903–09); National University of Mexico (1915). He was Herbert Spencer lecturer at Oxford; Harvard lecturer (1915–16). He holds the honorary degrees of D.Sci. from Oxford and Geneva, and LL.D. from Glasgow and South Carolina universities. He was vice-president of the International Congress of Psychology (London 1892); president of Criminal Anthropology at Geneva in 1896; president of the American Psychological Association (1897–98); judge of award at the World's Columbian Exposition (1893); was awarded a gold mark by the Royal Academy of Arts and Sciences of Denmark for the best work on the general topic of social ethics; and was elected member of the Institu International de Sociologie in 1898. He was also president of the International Congress of Psychology at Geneva in 1909; member of the Japanese Academy at Tokio; of Italian and British sociological societies; of Belgian and Dutch pedagogical societies, and of the Institute of France, succeeding William James in 1909. With J. McK. Cattell he founded the *Psychological Review* in 1894 and was editor-in-chief of the 'Dictionary of Philosophy and Psychology.' In addition to many contributions to various learned journals, Professor Baldwin is author of 'German Psychology of To-Day' (trans. 1886); 'A Handbook of Psychology' (2 vols., 1889–91); 'Elements of Psychology' (1893); 'Mental Development in the Child and Race' (1895, 3d ed., 1906); 'Social and Ethical Interpretations in Mental Development' (1897; 4th ed., 1906); 'The Story of the Mind' (1898); 'Fragments in Philosophy and Science' (1902); 'Development and Evolution' (1902); 'Thought and Things, or Genetic Logic' (3 vols., 1906–11; 'Darwin and the Humanities' (1909); 'The Individual and Society' (1910); 'History of Psychology' (1912). As editor he has published 'Dictionary of Philosophy and Psychology' (3 vols., 1901–05).

**BALDWIN, Maurice Scollard,** Canadian clergyman: b. Toronto, 21 June 1836; d. 1904. He was graduated at Trinity College in that city 1862; became rector of Saint Luke's Church in Montreal; was dean of Montreal 1882–83; and bishop of Huron 1883–1904.

**BALDWIN, Robert,** Canadian statesman: b. Toronto, 12 May 1804; d. there, 9 Dec. 1858. He began to practise law in 1825, and four years later became a member of the assembly of upper Canada. He was solicitor-general for upper Canada in 1841 in the first ministry under the Union, and was joint-premier in the La Fontaine-Baldwin administrations of 1842–43 and 1848–51.

**BALDWIN, Simeon Eben,** American jurist: b. New Haven, Conn., 5 Feb. 1840. He is a great-grandson of Roger Sherman, a signer of the Declaration of Independence, and great-great-grandson of President Clap, of Yale. His father was a United States senator and governor of Connecticut. Judge Baldwin was graduated from Yale 1861, and Harvard Law Schools. Settling in New Haven he rapidly acquired a large general practice, in which he continued until 1893. Since 1872 he has held a professorship in the Yale Law School. From 1893 to 1907 he was an associate justice of the Connecticut Supreme Court of Errors; from 1907–10, chief justice; from 1911 to 1915 governor of Connecticut. As a legal writer he has a wide reputation in the United States and abroad through his contributions to leading law journals. He is the author of 'Digest of Connecticut Reports' (2 vols., 1871–82; revision, 2 vols., 1900); 'Illustrated Cases on Railroad Law'; 'Modern Political Institutions' (1899); 'Two Centuries' Growth of American Law' (co-author, 1901); 'American Railroad Law' (1904); 'The American Judiciary' (1905); 'Education in Its Relation to Citizenship' (1912); and a member of several learned societies of much importance, both in the United States and abroad.

**BALDWIN, Stephen Livingston,** American missionary: b. 1835; d. Brooklyn, N. Y., 1902. Graduated at Concord Biblical Institute 1858. He went to China as a missionary under the auspices of the Methodist Episcopal Church, and on his return to the United States he held several pastorates, and was for the last 14

years of his life recording secretary of the Missionary Society of the Methodist Episcopal Church. While in China he translated a large part of the Bible into Chinese, and, it is said, printed the first copy of the Bible in that language. He was the author of 'Foreign Missions of the Protestant Churches' (New York 1900) and was one of the authors of 'The Picket Line of Missions' (New York 1897).

**BALDWIN, William Henry,** American capitalist and philanthropist: b. Boston, Mass., 5 Feb. 1863; d. Locust Valley, L. I., 2 Jan. 1905. He was graduated from Harvard College in 1885 and studied for a year at the Harvard Law School. Entering the Omaha auditor's office of the Union Pacific Railway as a clerk, in less than a year he was promoted general traffic manager at Omaha; in 1888 became assistant general freight agent for the Union Pacific; in 1889–90 he was president of the Montana Union Railroad; and in 1890 was elected assistant vice-president of the Union Pacific. In 1891 he entered the service of the Flint & Pere Marquette Railroad as general manager; in 1894 became third vice-president of the Southern Railway, and in 1895 second vice-president and general traffic manager of the same road. In 1896 he was chosen president of the Long Island Railroad; his administration was particularly efficient and marked by a rapid growth of the road and the completion of a number of improvements. He was actively interested in reform movements in New York city, serving as chairman of the Committee of Fifteen appointed in 1900. He was also a leader in the Southern educational movement, being president of the General Education Board, a member of the Southern Education Board, and a trustee of Tuskegee Institute.

**BALDWIN CITY,** Kan., town of Douglas County, 15 miles south of Lawrence, on the Atchison, Topeka & Santa Fé Railroad. It is the seat of Baker University, founded in 1858. It is situated near the battlefield of Black Jack, the scene of the first conflict in the slavery troubles before the Civil War. Baldwin City was settled in 1853 and incorporated in 1859. The government is vested in a mayor, chosen for one year, and a city council. The water works and electric light plant are municipally owned. Pop. (1910) 1,386; (1913) 1,450.

**BALDWINSVILLE,** N. Y., village of Onondaga County, 12 miles northwest of Syracuse, on the Delaware, Lackawanna & Western Railroad, and on the Barge Canal and Seneca River. It has manufactories of machines, springs, knives and paper. It is situated in a fertile agricultural region, producing corn, dairy products, grain, hay and tobacco. Natural gas abounds in the neighborhood and the water power available renders electric power for manufacturing and lighting at low rates. The village contains a fine high school building and owns the water plant. Pop. 3,099.

**BALE, John,** an English ecclesiastic: b. Suffolk 1495; d. Canterbury 1563. Although educated a Roman Catholic, he became a Protestant and had to take refuge in the Netherlands. On the accession of Edward VI he returned to England, was presented to the living of Bishop's Stoke, Southampton, and soon after was nominated bishop of Ossory in Ireland. Here, on preaching the reformed religion, popular fury reached such a pitch that in one tumult five of his domestics were murdered in his presence. On the accession of Mary he lay some time concealed in Dublin. After enduring many hardships he was enabled to reach Switzerland, where he remained till the death of Mary. On his return to England he contented himself, till his death, with the calm enjoyment of a prebendal stall at Canterbury. He was so bitter a controversialist that he earned the title of "Bilious Bale." The only work which has given him distinction among authors is his 'Scriptorum Illustrium Majoris Britaniæ Catalogus'; or 'An Account of the Lives of Eminent Writers of Britain.' This account, which, according to the title, commences with Japhet, the son of Noah, reaches to the year 1557, at which time the author was an exile on the Continent. It is compiled from various writers, but chiefly from the antiquary Leland.

**BÂLE,** bäl, the French version of BASEL (q.v.).

**BALEARIC** (băl-ē-ăr'ĭk) **CRANE.** See CRANE.

**BALEARIC ISLANDS,** a group of four large and 11 small islands southeast of Spain, including Majorca, Minorca, Iviza and Formentera. They are inhabited by a Spanish race similar to the Catalans. Fruit, wine, grain and fish are the principal products and shoemaking is an important industry. The popular derivation of the ancient name Baleares (Greek *ballein,* to throw), has reference to the repute of the inhabitants for their skill in slinging, in which they distinguished themselves both in the army of Hannibal and under the Romans, by whom the islands were annexed in 123 B.C. After being taken by the Vandals under Genseric in 423 A.D., and in the 8th century by the Moors, they were taken by James I, King of Aragon, 1220–32, and constituted a kingdom which in 1349 was united to Spain. The islands now form a Spanish province, with an area of 1,935 square miles. Consult Vuillier, 'The Forgotten Isles' (New York 1896). Pop. (1911) 326,023.

**BALÉCHOU,** bä-lā-shoo, **Jean Jacques Nicolas,** celebrated French engraver: b. Arles 1715; d. Avignon, 18 Aug. 1765. His full-length portrait of Augustus, King of Poland, has been proclaimed the masterpiece of its kind in the 18th century. But Baléchou dishonestly sold the best proofs for his own benefit and was consequently expelled from the Academy of Fine Arts.

**BALEEN'.** See WHALEBONE.

**BALEEN WHALES,** the group of whales whose mouths are furnished with a growth of baleen or whalebone (q.v.). They form a sub-order *Mysticeti* of the *Cetacea,* which includes the families *Balænopteridæ,* or rorquals, and *Balænidæ,* the right whales. These whales are known in all oceans and form an important object of the chase. See HUMPBACK; RIGHT WHALE; RORQUAL; WHALE; etc.

**BALER,** Philippines, a town in the northeast part of Luzon. The population is under 3,000, mainly natives. The most conspicuous edifice is a native Catholic church. The town is noted for the heroic defense of a Spanish

garrison in 1899, during a siege by the Filipinos, lasting 11 months. The Spaniards were commanded by Lieut. Saturnino Martin Cerezo, who refused to surrender the town, even when directed to do so by his superiors in Manila. He entrenched himself in the church and heroically resisted the besiegers until his supplies gave out, when he surrendered with all the honors of war, 2 July 1899. Baler was occupied by the American troops and garrisoned with two companies of the 34th Volunteer Infantry, under Major Shunk, in 1900.

**BALESTIER,** băl-ĕs-tēr', **Charles Wolcott,** American journalist, author and publisher: b. Rochester, N. Y., 13 Dec. 1861; d. 6 Dec. 1891. He studied at Cornell University and the University of Virginia. He was editor of *Tid-Bits,* a humorous weekly. In 1889 he became junior partner of the publishing firm of Heinemann & Balestier of London and Leipzig. His writings, which deal largely with frontier life in Colorado, include 'The Naulahka,' written in collaboration with Rudyard Kipling, his brother-in-law; 'Benefits Forgot' (1892) and a 'Life of James G. Blaine' (1884); 'A Patent Philtre' (1884); 'A Fair Device' (1884); 'A Victorious Defeat' (1886); 'A Common Story' (1891).

**BALESTRA,** bą-lĕs'trą, **Antonio,** an Italian painter: b. Verona 1666; d. there, 21 April 1740. He became a pupil of Balucci in Venice and subsequently studied in Rome under Carlo Maratti. He executed the 'Defeat of the Giants,' which took the prize at the Academy of Saint Luke in 1694. In 1695 he left Rome for Venice, where he became the head of a school and counted many distinguished names among his pupils. His works are found in many of the galleries and churches of northern Italy. Among his paintings are 'Saint Theresa,' at Bergamo, a 'Virgin,' at Mantua, and a portrait of himself, at Florence. He was among the last of the Venetian school of artists.

**BALFE,** bălf, **Michael William,** British composer: b. Dublin, 15 May 1808; d. 20 Oct. 1870. He received his first instructions in music from his father and Charles Horn In his 7th year he performed one of Viotti's concertos before the public; at 16 he performed the part of Caspar in 'Der Freischütz' at Drury Lane. In 1825 he went to Italy, wrote the music for a ballet, 'La Pérouse,' for the Scala at Naples, and in the following year fulfilled an engagement to sing at the Théâtre des Italiens, Paris, with moderate success. He returned to Italy, and at Palermo (1830) his first opera, 'I Rivali,' was produced. For five years, with somewhat careless haste, he continued singing and composing sundry operas for the Italian stage, which are now forgotten. In 1835 he came to England and had his 'Siege of Rochelle' brought out at Drury Lane. It hit the popular taste and was quickly followed by others equally successful in this respect. Part of this success was no doubt due to the great artistes who took the leading characters, Malibran, Grisi, Lablache, Rubini and other stars of that time; but the works had high merits of their own, being marked by brilliancy, melody and fertility of invention. In 1846 he was appointed conductor of the Italian opera at Her Majesty's Theatre, London. If Balfe was wanting in depth and dramatic force, he had a very thorough knowledge of effects and command of orchestral resources; and his compositions are distinguished by fluency, facility and melodic power. His operas continue popular in England and elsewhere, among the chief being 'The Bohemian Girl' (the most popular of all); 'The Rose of Castile'; 'The Daughter of Saint Mark'; and 'Satanella.' His posthumous opera, 'The Talisman,' was brought out in London in June 1874, with great success.

**BALFOUR,** Sir **Andrew,** Scottish botanist and physician: b. Fifeshire 1630; d. 1694. After completing his studies at Saint Andrews and London, and traveling on the Continent he settled in Edinburgh, where he planned, with Sir Robert Sibbald, the Royal College of Physicians, and was elected its first president. Shortly before his death he laid the foundation of a hospital in Edinburgh, which, though at first narrow and confined, expanded into the Royal Infirmary. His familiar 'Letters' were published in 1700.

**BALFOUR, Arthur James,** English statesman: b. Scotland (son of James Maitland Balfour of Whittinghame, Haddingtonshire, and a daughter of the 2d Marquis of Salisbury), 25 July 1848. He was educated at Eton and Trinity College, Cambridge, where he took his M.A. degree in 1873. He entered the House of Commons in 1874 as member for Hertford, which constituency he represented until 1885. He acted as private secretary to his uncle, the Marquis of Salisbury, at the Foreign Office 1878–80, and accompanied him to Berlin in the negotiations leading up to the Berlin Treaty. He was president of the Local Government Board of 1885–86, was secretary for Scotland 1886–87, and secretary for Ireland 1887–91. His selection by his uncle for the difficult and thankless position of Irish Secretary was regarded as an altogether mistaken choice, and was hailed by the Irish Nationalists with derision, the current opinion then being that he was an indolent, cultured man of fashion who was quite out of his sphere in public life. No idea could have been more mistaken. At the Irish Office he showed that, though far from robust physically, he possessed nerves of iron; the continuous contest of wits that went on between him and the Irish members on the floor of the House appeared to act as a tonic to him; and he developed a debating talent that presently brought him into front rank in public life. He administered the repressive Crimes Act with a vigor that engendered an embittered opposition; and he succeeded in passing several ameliorative measures which later culminated in the Land Purchase Act of 1904. So strongly did he increase his hold on his party during his tenure of the Irish Office that, on the retirement of Mr. W. H. Smith, Mr. Balfour was called on to succeed him as First Lord of the Treasury and leader of the House of Commons. He led the opposition during the Liberal administration of 1892–95. On the return of the Unionist party to power in 1895 he resumed his former place in the government. On the resignation of Lord Salisbury in July 1902 he succeeded to the premiership. As Premier he carried through the comprehensive Education Act of 1902 and the Irish Land Act of 1904 and he created the Commit-

tee of National Defense. He was singularly unfortunate in the period of his premiership. The South African War had just concluded, and inquiry showed contract irregularities on a large scale. In 1903 he was confronted with a grave and unexpected crisis in the Unionist party, when Joseph Chamberlain resigned as Colonial Secretary in order to conduct a tariff campaign in the country which aimed at colonial preference and the reversal of the British free trade fiscal policy. Mr. Balfour, desirous of preserving the party unity, took a middle course, declaring that he regarded free trade not as a principle but as a matter of expediency. Many of the free traders took alarm and withdrew their support, and lively controversies were engaged in, especially by the opposition, as to whether Mr. Balfour was or was not a free trader. His position of open-mindedness Mr. Balfour defended throughout the long financial controversies with unshaken serenity of temper and superb dialectical skill. But his government was wrecked on the fiscal issue; in an appeal to the country in January 1906 the Unionist party was "snowed under," and Mr. Balfour lost the seat he had held in East Manchester since 1885. He was immediately thereafter returned for the City of London. In the succeeding sessions he led an attenuated body of followers composed of not more than one-fourth of the membership of the whole House; but by common consent in no Parliament did he give greater proofs of the personal hold he possesses over the House of Commons. In 1911 he resigned from the leadership of the opposition and was succeeded by Mr. Bonar Law. In June 1915 he was one of the "elder statesmen" who were invited to join the National Ministry formed by Mr. Asquith at that time, and succeeded Mr. Winston Churchill as First Lord of the Admiralty. On the reorganization of the coalition cabinet in 1916, with Lloyd George as Premier, Mr. Balfour assumed the portfolio of Minister of Foreign Affairs and in April–May 1917 visited America as head of the British Commission to the United States to secure unity of effort in prosecuting the war against Germany. Possessed of a remarkable charm of manner, and seeking in music and golf solace and recreation, no man in British politics approaches him not only in sheer debating skill, but in the art of clothing his most impromptu utterances in almost perfect literary form. He has also the unique power of raising every debate in which he takes part to a higher plane of discussion, and this has made him the exponent of the general mind of the House on many important occasions. Mr. Balfour is distinguished as a thinker as well as a politician, was a member of the Gold and Silver Commission of 1887–88, and was president of the British Association in 1904. His works include 'A Defence of Philosophic Doubt' (1879); 'Essays and Addresses' (1893; new ed., enlarged, 1905); 'The Foundations of Belief' (1895); 'Insular Free Trade' (1903); 'Criticism and Beauty' (Ronanes Lecture, 1909); 'Theism and Humanism' (Gifford Lectures, 1914; 1915).

**BALFOUR, Francis Maitland,** embryologist: brother of the foregoing, b. 10 Nov. 1851. He studied at Harrow and Trinity College, Cambridge. Articles on his special study gained him a high reputation while still an undergraduate, and after further work at Naples he published in 1874, in conjunction with Dr. M. Foster, 'Elements of Embryology,' a valuable contribution to the literature of biology. He was elected a fellow of his college; fellow and member of the council of the Royal Society; lecturer on, and finally, in 1882, professor of animal morphology at Cambridge, a chair specially instituted for him. The promise of his great work, 'Comparative Embryology' (1880–81) remained unfulfilled, as 19 July 1882 he was killed by a fall on Mont Blanc.

**BALFOUR, Gerald William,** English statesman: b. 1853 (brother to the two preceding). He was educated at Eton and Trinity College, Cambridge, entered Parliament in 1885, and was chief secretary for Ireland in the Unionist ministry from 1895–1900; president of the Board of Trade, 1900–05; and president of the Local Government Board, 1905–06. He piloted the Irish Local Government Bill of 1898 through the House of Commons.

**BALFOUR, Isaac Bayley,** Scottish botanist: b. Edinburgh, 31 March 1853. He was professor of botany in the University of Glasgow 1879–84, at Oxford University 1884–88, and since 1888 at the University of Edinburgh. He explored the island of Socotra in 1880 in behalf of the British Association and of the Royal Society of Edinburgh. He is King's botanist in Scotland and keeper of the Royal Botanic Garden in Edinburgh.

**BALFOUR, Sir James,** Lord Pittendreich), Scottish judge, and a conspicuous actor in the civil wars which ended in the dethronement of Mary, Queen of Scots: b. Fifeshire, Scotland, about the beginning of the 16th century; d. 1583. He espoused the Protestant cause, and in 1547, for his share in the conspiracy against Cardinal Beaton, he was, with Knox and other reformers, condemned to the galleys. In 1549 he was released, having abjured his heresies, and returned to Scotland. His abilities and tact gained him appointments and he was high in office on the arrival of Mary in Scotland, and was with the Queen at Holyrood on the night of Rizzio's assassination. He is believed to have drafted the bond in the murder of Lord Darnley, Mary's husband, but contrived to divert suspicion from himself. In 1567 he was appointed captain of Edinburgh castle. A change in Balfour's convictions (if any he had) was forced upon him, for he saw that a powerful party had been formed against Mary and the advantages of an alliance with them overcame all scruples. He held the castle of Edinburgh against the Queen, and was the means of delivering up Mary's letters into the hands of her enemies. He afterward surrendered the castle for various considerations. On the breaking out of the civil war Balfour sided with the regent, Murray, and was with the regent's army at the battle of Langside, but after Mary's imprisonment in England he took part in conspiracies for her restoration, although professing adherence to the regents Murray and Morton. His last public act was furnishing the evidence of Morton's guilt in the murder of Darnley, for which Morton was condemned and executed. His flexibility of adaptation was remarkable, and it was shown in the facility with which he changed sides. He has been described as the "most corrupt man of his

age.» 'Practicks of Scots Law,' the earliest text-book of Scots law, attributed to him, continued to be used and consulted in manuscript for nearly a century until it was supplanted by the 'Institutes of Lord Stair.'

**BALFOUR, John** (OF KINLOCK), one of the chief actors in the assassination of Archbishop Sharp in 1679, for which his estate was forfeited and a price set on his head. He fought at Drumclog and Bothwell Bridge, and is said afterward to have escaped to Holland. According to one account he died on a homeward voyage to Scotland; by another he never left the country, but settled in the parish of Roseneath, Dumbartonshire, under the name of Salter. He is erroneously described by Scott in 'Old Mortality' as «Balfour of Burley,» quite a different personage. The Lord Balfour of Burleigh, who succeeded to the title in 1663, spent his youth in France and died in 1688. The title exists to-day.

**BALFRUSH,** băl-froosh', or **BARFURUSH** («mart of burdens»), a town in the Persian province of Mazanderan, on the river Bhawal, 12 miles from the Caspian Sea. Balfrush is a centre of trade between Russia and Persia, exporting large quantities of silk, rice and cotton, while the Russians supply iron and naphtha. It has excellent bazaars, numerous caravanserai, and several Mohammedan colleges. Pop. about 50,000.

**BALG, bălg, Gerhard Hubert,** American philologist: b. Efferen, near Cologne, Rhenish Prussia, 11 Nov. 1852. He was graduated from the University of Wisconsin. He has translated W. Braunes' 'Gothic Grammar, with Selections and Glossary' (1883); edited 'The First Germanic Bible, and Other Remains of the Gothic Language with Introduction and Glossary' (1891); and compiled 'A Comparative Glossary of the Gothic Language, with Especial Reference to English and German' (1887–89). He received his doctor's degree at the University of Middlebury (1883) and was one of the editors of the 'Standard Dictionary' where he was engaged on the etymology of Romanic words from a to g.

**BALI,** bä'lē, or **BALLY,** an island of the Indian Archipelago, Dutch East Indies, and lying east of Java, to which it physically belongs. Its greatest length is 85 miles; breadth, 55 miles; area about 2,095 square miles. It consists of a series of volcanic mountains, with alluvial plains, of which the loftiest, Agoong (10,497 feet), became active in 1843 after a long period of quiescence. None of the rivers are navigable. Principal products, rice, cocoa, coffee, indigo, cotton, etc. The inhabitants physically and linguistically are akin to the Javanese, are skilful agriculturalists and artisans, and excel in sculpture and in the working of gold and iron. The prevailing religion is Brahmanism of an ancient type. Suttee, or the burning of widows, was long practised. Bali is divided into eight provinces under native rajahs, and forms one colony with Lombok, the united population being estimated (1913) at 1,207,310. The capital is Buleleng. The island was visited by a diastrous earthquake in January 1917.

**BALIKESRI,** bä-lē-kĕs'rē, **BALU-KISSAR,** or **BALIK-SHEHR,** Turkey-in-Asia town of Anatolia, 75 miles southwest from Brusa. It was built of unburnt bricks and contains the tomb of a celebrated Mohammedan saint and a manufactory of felt cloth for military clothing. It is the seat of an annual fair, visited by over 30,000 people. It has considerable trade in silk fabrics, grain, opium, and the region abounds in minerals. Pop. over 25,000.

**BALILING,** or **BULELENG,** a district of the island of Bali, Dutch East Indies. The exports are rice and bullocks, and the chief trade is with the Bughis of Celebes. In 1847 the Dutch were signally defeated in an attack upon the fort of Djaga Raga in this district.

**BALIOL,** bă'li-ŏl, **Edward,** King of Scotland, son of John Baliol of Scotland; d. Doncaster 1367. In 1332, at the head of the barons who had been dispossessed by Bruce, and in opposition to Bruce's son, David II, then a minor, he made a successful invasion of Scotland and on 24 September of that year was crowned King of Scotland at Scone. Having privately rendered homage to Edward III of England, he was routed by a party of Scottish nobles and dispossessed of his crown after a reign of three months. He regained it the next year as an instrument and vassal of Edward. In 1356 he surrendered the kingdom to Edward in return for a pension. He was the last of the Baliols.

**BALIOL,** or **BALLIOL, John,** father of King John Baliol, an English baron in the reign of Henry III: d. 1269. In 1263 he laid the foundation of Balliol College (q.v.), Oxford, which was completed by his widow, Devorguila or Devorgilla. She was daughter and coheiress of Alan of Galloway, a great baron of Scotland, by Margaret, eldest daughter of David, Earl of Huntington, brother of William the Lion. It was on the strength of this genealogy that his son, John Baliol, was, on the adjudication of Edward I of England, declared rightful King of Scotland.

**BALIOL,** or **BALLIOL, John,** King of Scotland: b. about 1249; d. 1315. On the death of Princess Margaret of Norway, grandchild of Alexander III, in 1290, Baliol claimed the vacant throne by virtue of his descent from David, Earl of Huntington, brother to William the Lion, King of Scotland. Robert Bruce (grandfather of the King) opposed Baliol; but Edward I's decision was in favor of Baliol, who did homage to him for the kingdom, 20 Nov. 1292, and was crowned at Scone on the 30th of the same month. Irritated by Edward's harsh exercise of authority, Baliol concluded a treaty with France, then at war with England; but, after Scotland had been overrun by Edward, he did homage to Edward at Montrose 10 July 1296. He was sent with his son to the Tower, but, by the intercession of the Pope in 1299, obtained liberty to retire to his Norman estates, where he died. He was derisively nicknamed by the Scots «Toom Tabard» (Empty Jacket).

**BALIOL, Martha Bethune,** the imaginary narrator of several of Sir Walter Scott's 'Chronicles of the Canongate.'

**BALIOL COLLEGE.** See BALLIOL COLLEGE.

**BALISARDA,** bä-lē-sär'dą, a magic sword in Ariosto's 'Orlando Furioso,' stolen from

Orlando by Brunello, and afterward given to Rogero.

**BALISAUR,** băl-ĭ-sâ'oor (Hindu, *balloosoor*), the sand-badger of India, called by Hindus the pig-like badger or "sand-hog," on account of its long snout. See SAND-BADGER.

**BALISTA,** or **BALLISTA,** a machine used in military operations by the ancients for hurling heavy missiles, thus serving in some degree the purpose of the modern cannon. The motive power appears to have been obtained by the torsion of ropes, fibres, catgut or hair. They are said to have sometimes had an effective range of a quarter of a mile, and to have thrown stones weighing as much as 300 pounds. *Balistæ* differed from *catapultæ,* in that the latter were used for throwing darts.

**BALIZE,** bą-lēz'. See BELIZE.

**BALKAN LEAGUE,** an alliance formed in the summer of 1912 between Bulgaria, Serbia, Greece and Montenegro for the purpose of taking joint diplomatic and military action against Turkey and which led to the Balkan wars (q.v.) in 1912 and 1913. The root of the trouble lay in Macedonia (q.v.), where the long-misruled and tortured inhabitants appealed to the peoples of the now liberated and united neighboring states to rescue them from the oppression of the Turk. At the beginning of 1912 the condition of Macedonia pointed to an approaching crisis. For some years the revolutionaries had their headquarters in Bulgaria, but had suspended their operations in 1909 on the deposition of Abdul Hamid II (q.v.), trusting to Young Turk promises of reform. But in the autumn of 1911 their activities were resumed, the leaders declaring that "compared with the last four years of the Hamidian régime, when European control existed and the country enjoyed a certain financial autonomy, the condition of the people is infinitely worse and their sufferings have increased." The revolutionary organization in Macedonia had also ceased its propaganda for a time on the strength of Young Turk promises. It had resumed operations already in 1910 in consequence of the pan-Islamic tendencies of the Turkish government, and a number of small bands were formed by the secret committees which succeeded the Bulgarian "constitutional clubs" under the name of the "Macedonian Internal Organization." In December 1911 an attempt to blow up a crowded mosque at Ishtib (Macedonia) on a market day when the town was full of peasants, many of them Bulgarians, excited the Mohammedan population to retaliatory measures. In the riot some 200 Bulgarians were killed or wounded, and from that day forward a campaign of outrage and counter-outrage was carried on with appalling savagery by Mohammedan and Bulgarian murder bands. The leaders of the Internal Organization refused to negotiate with the Turkish government, declaring their resolve to continue the revolutionary activity until their object was achieved — autonomy for Macedonia through international European intervention. The Organization sent delegates to the European capitals to enlist the sympathy and aid of the powers. They asked that the administration of Macedonia should be placed under the direct control of the great powers, with a Christian governor-general.

On the eve of the general elections (March 1912) the Turkish government sent a special commission headed by the Minister of the Interior, Hajji Adil Bey, to inquire into the grievances of Albania and Macedonia and to suggest measures for their alleviation. Laden with an elaborate program of reforms, the commission returned to Constantinople toward the end of June. The report submitted by Hajji Adil Bey led Sir Edward Grey (15 July) to state that "the declarations made by the Turkish Minister of the Interior . . . and the request of the Turkish government for the loan of five additional British officers . . . and for two additional French officers for service in the Ottoman *gendarmerie* indicate that the Sublime Porte realized the need of reforms in the administration of the European provinces of the Empire, and are determined to take the necessary measures to introduce them." In August the 25th anniversary of King Ferdinand's arrival in Bulgaria was celebrated with great rejoicings in the ancient capital of Tirnovo, when the tragedy of Ishtib in the previous December was repeated on a larger scale at Kotchana, 20 miles northwest of Ishtib. A bomb thrown in the market place with the object of provoking reprisals which should attract the attention of Europe was followed by a massacre of Bulgarians. Almost simultaneously a massacre of Christians by Turkish troops took place at Berane on the Montenegrin frontier. Turkish soldiers also assisted in the other two butcheries. These atrocities sent a thrill of horror through Europe and tended considerably to swell the wave of patriotism in Bulgaria occasioned by the dynastic festivities. Public indignation was aroused in Montenegro, and both peoples clamored for war. The Turkish government proclaimed a state of siege at Kotchana and ordered the immediate court-martial of the officials implicated in the massacre. But the mischief had been done; Bulgaria, Serbia, Greece and Montenegro started mobilizing.

The inner history of the Balkan League presents a curious tangle. The most remarkable circumstance about it is, for the student of Balkan affairs, the fact that the various states were able to come to any agreement at all. The idea of a Balkan League was no novelty; attempts in that direction had been in the air from time to time since long before the Russo-Turkish War of 1877. It emanated from Serbia, and was favorably discussed between Rumania and Bulgaria after the close of the war in 1878, revived in Greece in 1891, and opposed by Bulgaria, which country reopened the proposal herself in 1897. Jealousy and mistrust among the Balkan states kept them apart, while the long struggle of underground intrigues between Austria and Russia for predominance in the peninsula only tended to increase the volume of mutual suspicions. Bulgarian sentiment was divided between Russia and Austria; Serbia leaned toward Russia and had numerous grievances against Austria, over the annexation of Bosnia and Herzegovina (q.v.) and the prohibitive tariffs against Serbian live stock; Rumania had a grudge against Russia because that power had deprived her of Bessarabia, and another versus Austria on account of the Rumanian districts of Transyl-

vania; and Greece feared the Russian aspirations to Constantinople. Bulgaria and Greece suspected each other because of the old ecclesiastical quarrel over the Patriarchate and the Exarchate, and the perpetual rivalries between their respective *komitadjis* in Macedonia. Bulgaria had not trusted Serbia since their war in 1885, and looked askance on Rumania because of the Dobrudja (q.v.) and its Bulgarian population. Even the Serbs and Montenegrins, though blood-brothers, were not on the best of terms with each other. In addition to this, all of them had reason to fear the Austro-German *Drang nach Osten*, which threatened to put an end to their national existence. The only possible bond that could unite them was their common hatred of the Turk, who systematically and indiscriminately ill-treated Bulgars, Serbs, Greeks and Kutzo-Vlachs (Rumanians) in Macedonia. That hate united and led them to victory. On the morrow of their triumph, jealousy stepped in and separated them again; the Balkan League died a premature death and bequeathed to its partners a legacy of bitter hatred that was soon to prove disastrous to all.

It appears that the prime movers in the formation of the Balkan League were the King of Bulgaria and the Greek Premier, M. Venizelos, who came to an understanding in the spring of 1912. But in May Bulgaria and Serbia privately shared Macedonia between themselves, the former to take central Macedonia with Monastir and Okhrida, and the latter the northern or Old Serbian portion, leaving the remainder to be decided upon by Russia at a later date. The arrangement between Bulgaria and Greece was at first of a purely defensive nature against a Turkish attack upon either, which leads to the conclusion that Greece was to be left outside when, if ever, it came to a division of any spoils of war. Curiously enough, the Turkish government was at the same time engineering an absolute alliance with Greece, a project that was suddenly wrecked by the Kotchana and Berane massacres. Apparently unacquainted with the Serbo-Bulgarian compact and its intentions, Greece found herself called upon at a few days' notice to decide whether she should throw in her lot with or against Turkey. Bulgaria and Serbia notified Greece of their resolve to declare war against Turkey in the event of their demands being rejected. Their determination was encouraged by the fact that Turkey had the Italian war on hand at the moment, and was decidedly getting the worst of it. The great powers realized that trouble was brewing, and the "European Concert" was hastily convoked to avert it. They had every reason to fear the Balkan nightmare on account of the possibilities it opened for a general European conflagration. On 14 Aug. 1912 Count Berchtold (q.v.) announced that he was about to engage in conversation with the great powers with a view "to co-ordinate the several efforts made by the powers in the interest of Balkan peace and of the *status quo*." He insisted upon "the expedience of giving to the Porte organized European encouragement and to the Balkan peoples equally organized advice to be patient and not to thwart Turkish purposes." This time, however, the inharmonious European Concert was doomed to failure; its diplomatic pressure and threats, more or less successful in the past, were now unheeded. Russia was known to be in sympathy with the Balkan states, and behind the coming struggle loomed the mighty spectre of the conflicting policies of Teuton and Slav. The integrity of the Turkish empire was vital to Austro-German ambitions, hence the fervid insistence of the "status quo." Promises of reforms were forthcoming, but the Balkan Allies were too well acquainted with the temporising quality of Turkish promises; they demanded that the powers should guarantee autonomy for Macedonia, and that they themselves should be included as administrators. On 28 Sept. 1912 they announced that the Balkan League was an accomplished fact; the alliance was signed on the 30th and immediate mobilization ordered. Montenegro declared war on Turkey 8 October and invaded Albania; on the 13th Bulgaria, Serbia and Greece delivered their ultimatum to Turkey at the same time rejecting all outside advice and assistance. Europe stood amazed; the "Concert" played its strongest notes, which were not even listened to in the Balkans; showers of threats and protests failed to move the Allies who for years had watched with painful self-control the ghastly sufferings of their compatriots under Turkish misrule. As already mentioned, Turkey and Italy were at war over Tripoli (q.v., also TURCO-ITALIAN WAR). To all appearances, Italy would be an ally of the Balkan League. Her fleet kept the best Turkish troops locked up in Tripoli and commanded the western waters of the peninsula, including the direct sea route from Smyrna to Salonica. Clearly the moment seemed propitious for the Allies. But another surprise burst upon Europe when Turkey suddenly made peace with Italy and declared war on Bulgaria and Serbia on 17 October, hoping to frighten Greece and detach her from the Allies; but the Greek government declared war on Turkey the next day, which completed the necessary formalities. The course of the campaign is related under Balkan Wars (q.v.).

It only remains here to trace the short career and ultimate fate of the Balkan League. After the remarkable military successes of the Allies over the Turks during October and November, an armistice was signed with certain conditions on the 3d of December and peace negotiations opened between the belligerents on the 16th in London. After an abortive session lasting till 29 Jan. 1913, the Balkan Allies broke off the negotiations and hostilities were resumed on 3 February. Contrary to European expectations, the Turk was defeated all along the line; the Allies had forced him back almost to the gates of his capital, and to save him from extinction in Europe the Triple Alliance (q.v.) insisted on peace. The Treaty of London (30 May 1913) ended the war and delimitated the new frontiers. But a quarrel had meanwhile broken out between Bulgaria and Serbia over the spoils. There had been small encounters between them for months, which drove Serbia and Greece to form an alliance against Bulgaria. Early in the morning of June 30 the Bulgarians violently attacked the Serbians. Within a week Bulgaria found herself attacked on four sides, by Serbs, Greeks, Turks and a new arrival on the scene — Rumania. Hopelessly defeated, Bulgaria had to surrender and agree to the terms of the Treaty

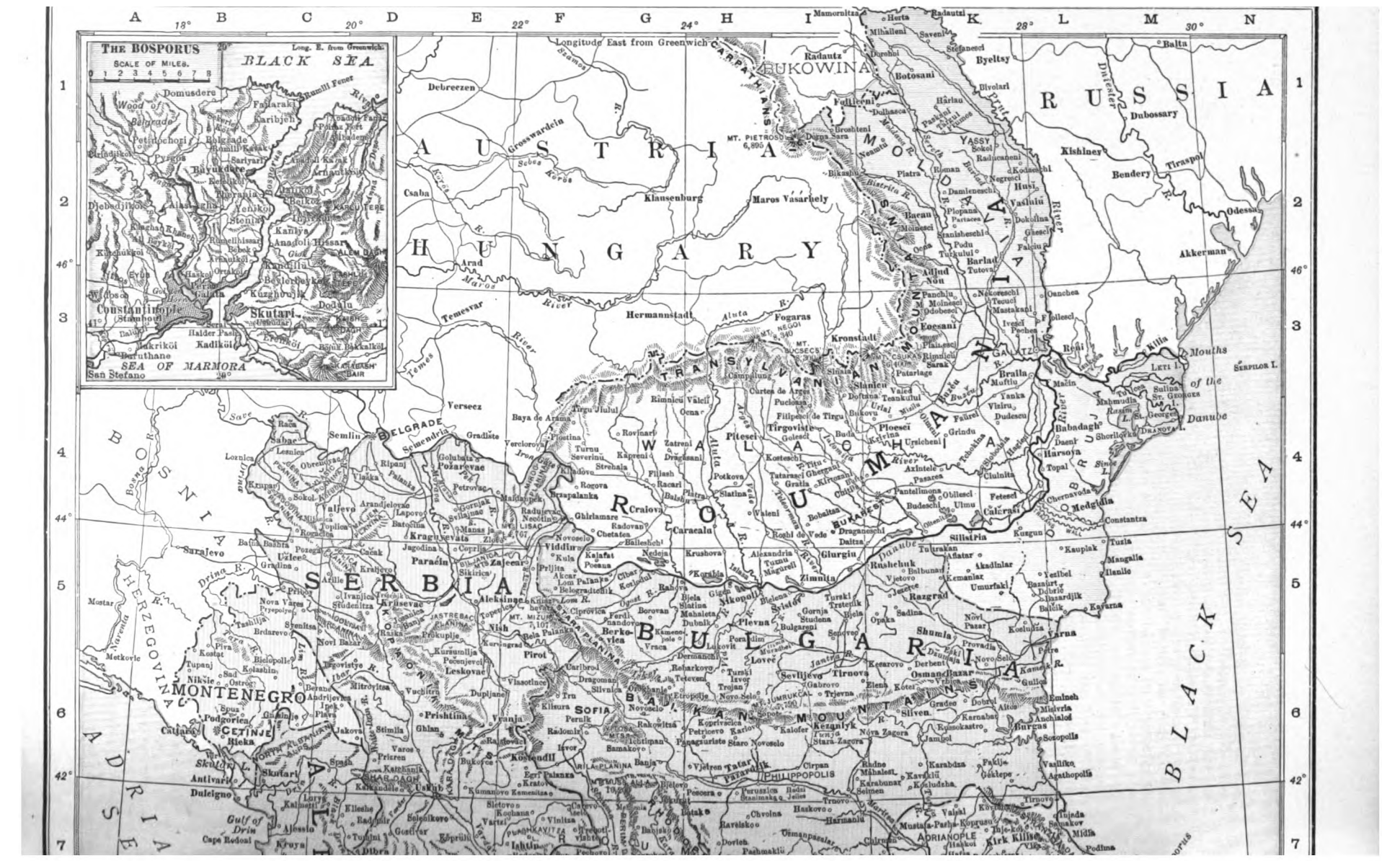
of Bucharest (10 Aug. 1913), by which she gained far less than she might have done had she been less irreconcilable in spirit and held together with her Allies. Thus the Balkan League lived barely a year; could it have been maintained or reconstituted, Germany would never have reached Constantinople in the greater war that was to follow exactly a year later. Perhaps, even, that war would not have happened, for, with Bulgaria on the side of Serbia, Montenegro, Rumania and Greece, an impassable barrier would have been laid in the path of the Austro-German Allies to the southeast, a barrier that would have effectually obliterated any possibility of Turkey joining hands with her Teutonic patrons. For bibliography see end of BALKAN PENINSULA AND BALKAN WARS.

HENRI F. KLEIN.

*Editorial Staff of The Americana.*

**BALKAN,** bäl-kän', or bäl'kän, **MOUNTAINS** (anciently called *Hæmus*), a lofty and rugged mountain range, extending from Cape Emineh Burun on the Black Sea, in eastern Roumelia, in a westerly direction to the borders of Serbia, and forming the southern boundary of the basin of the Danube. In the west it is connected with the much ramified mountain-system of the southeastern peninsula of Europe. Its length is over 200 miles; the average elevation is about 3,000 feet, but the group of the Khoja Balkans in the west have a mean height of 6,500 feet. Crystalline schists alternate with limestone ridges. The highest summit is Jumrukchal, 7,786 feet. The Balkan forms the watershed between the streams flowing northward into the Danube, and those flowing southward to the Ægean. The chief of the latter is the Maritza. The range which has a gradual descent on the north, where it is bordered by a broad zone of partially folded chains of sedementary rock, presents on the south a somewhat steep escarpment, and has always been considered the greatest natural bulwark of the Ottoman empire against enemies on the European frontiers. Yet in the Russo-Turkish War of 1877–78 the Russian troops managed to cross it without any great difficulty, although they had to encounter a stubborn resistance at Shipka Pass (4,370 feet). Here a Turkish army of 32,000 men surrendered to the Russians. The range is crossed by some 30 passes. The whole of the southeastern peninsula of Europe is known as the Balkan Peninsula. Copper, iron and lead are the chief minerals. See BALKAN PENINSULA.

**BALKAN PENINSULA,** a convenient geographical term applied to the easternmost of the three great peninsulas of southern Europe, of which the others are the Pyrenean or Iberian Peninsula (Spain and Portugal), and the Apennine Peninsula (Italy). In all three cases the names are derived from mountain ranges. But whereas the Pyrenees and Apennines separate their respective peninsulas from central Europe, the Balkan range offers no such distinctive geographical division. The Balkans are a continuation of the Carpathians, pierced by the Danube at the Iron gate, where the frontiers of Hungary, Serbia and Rumania meet. The name Balkan is apparently of Slavonic origin, but the Bulgarians, to whose country the range is mainly limited, use the term Stara Planina. Extending from the river Timok (Serbia) in the west through the heart of Bulgaria to the Black Sea, a distance of 375 miles, the Balkans form a line of demarcation for less than half of the northern limits of the peninsula. Assuming that rivers also form a natural boundary, the Balkan Peninsula ends on the right bank of the Danube and its tributaries, the Save and the Una; its western limit is near Fiume on the Adriatic, extending down the Ionian Sea to Cape Matapan; on the east it is bounded by the Ægean Sea, the Sea of Marmora and the Black Sea, and by the Mediterranean in the south. Though popularly included within this area, Rumania is not, strictly speaking, a Balkan state. Excluding that country, the area of the peninsula in square miles is 187,764, divided as follows after the redistribution of territories consequent upon the Balkan Wars of 1912–13: Bulgaria, 43,310 square miles; Serbia, 33,891; Greece, 41,933; Turkey (including the vilayet of Constantinople), 10,882; Montenegro, 5,603; Albania, about 11,000; Bosnia and Herzegovina, 19,768; Croatia and Slavonia, 16,421; Dalmatia, 4,956 square miles. If that portion of Rumania within the parallel of 45° north is included, an area of about 25,000 square miles would be added. No other district in Europe is so richly provided as the Balkan Peninsula with gulfs and excellent harbors of commercial and naval strategic value. An archipelago of numberless islands, the Cyclades and Sporades of ancient fame, forms a continuous bridge between the Balkan Peninsula and Asia Minor. The Black Sea is connected with the Sea of Marmora through the Bosphorus, a channel about 20 miles long, and so narrow that Constantinople, at the southwest extremity of the Thracian Bosphorus, is but one mile distant from the Asiatic city of Scutari, eastward across the Bosphorus. The Sea of Marmora is linked with the Ægean by the Dardanelles with an average width of between three and four miles. The Balkan Mountains extend in a varied formation from the Adriatic to the Euxine, breaking up in their advance eastward into several parallel chains with many more or less strong spurs north and south; several ranges extend southward almost to the Ægean: the Perim Dagh and the ancient Rhodope Mountains of Despoto Dagh. They are frequently broken by defiles or passes of different degrees of serviceableness as routes. The principal passes are the Nadir-Derbend, Karnabad, the Basardshik-Sophia, the Trajan, Rosalitha and Shipka, the latter famed by the heroic struggles between the Russians and Turks in 1877 and and 1878. The principal range of the Balkans is thus divided into several sections, like the Etropol, Khoja and Shipka Balkans, and formed the boundary between Bulgaria and Rumelia before the two were united. The main elevation of the chain is from 4,000 to 5,000 feet, but it rises much higher in various parts, the loftiest elevation of 9,700 feet above sea-level being reached by Mount Scardus in the Char Dagh. The Balkans are rich in minerals, especially rock salt, lead, iron-ore, copper, silver, but the treasures of the soil are yet very imperfectly known in spite of the geological researches, undertaken by German, French and other travelers and scientists. The mountains are mostly of a granite formation, but the mountain system is very complicated, and its


THE BOSPORUS
SCALE OF MILES.
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Long. E. from Greenwich
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Domusdere
Wood of Belgrade
Petrikochori
Belgrade
Pyrgos
Bayukdere
Therapia
Yenikoi
Stenia
Djebedjikoi
Aivasserai
Buyukdere
Rumili Feneri
Rumili Kesik
Sariyarik
Karibjeh
Arnaoutkeui
Beikoz
Kanlija
Anadoli Hissar
Kandilla
Beikos Bay
Kuzghoujik
Skutari
Dodulu
Constantinople
Stamboul
Halder Pasha
Kadiköi
Bakrikoi
Baruthane
SEA OF MARMORA
San Stefano
Longitude East from Greenwich
AUSTRIA
HUNGARY
RUSSIA
BUKOWINA
CARPATHIANS
MT. PIETROSU 6,896
Debreczen
Grosswardein
Csaba
Klausenburg
Maros Vásárhely
Arad
Temesvar
Hermannstadt
Fogaras
MT. NEGOI 8,340
MT. NCUCSCS 8,000
Kronstadt
TRANSYLVANIAN ALPS
Campulung
Curtea de Argesh
Rimnicu Vâlcii
Pitesci
Targoviste
Buda
Ploesci
Ursicheni
Slanicu
Buzeu
Focsani
Galatz
Braila
Ismail
Reni
Kilia
Mouths of the Danube
St. George
Sulina
Serpilor I.
Leti I.
Odessa
Akkerman
Bendery
Tiraspol
Kishlney
Dubossary
Dniester
Prut
Pruth
Sereth
Jassy
Botosani
Byeltsy
Balta
Mihaileni
Radautz
Herta
Radautzi
Savieni
Stefanesci
Dorohoi
Follicreni
Dolhasca
Harlau
Bivolari
Broshteni
Neamtzi
Bikashi
Piatra
Roman
Bacau
Moinesci
Pashkani
Tekuch
Berlad
Vasluiu
Husi
Damienesch
Stanisheschi
Podu Turkului
Tutova
Adjud
Nou
Panchiu
Mt. Moineseci
Odobesci
Nekoreschi
Tecuci
Mastakani
Ivesci
Pechea
Galatz
Ouanchea
Follesci
Romanian Plain
Danube
Danube R.
Babadagh
Harsova
Topal
Sinoe L.
Chernavoda
Medgidia
Constantza
Kustendje
Tulcea
Kasplak
Mangalia
Ilanlic
Silistria
Turtukan
Aftatar
Akadinlar
Rushchuk
Glurgiu
Zimnita
Turnu
Kalafat
Vidding
Nedeja
Krushova
Alexandria
Tumu Magurelei
Caracalu
Craiova
Rovinari
Zatreni
Dragasani
Filiasi
Racari
Potkova
Slatina
Valeni
Roshi de Vede
Draganeschi
Daitza
Bebatsa
Gratia
Kostesch
Tatarasci
Gherghina
Pasarea
Axintele
Ciulnita
Budeschi
Ulmu
Pantelimona
Obilesci
Fetesci
Calarasi
Oltenitza
Giurgevo
Razgrad
Shumla
Varna
Provadia
Novi Bazar
Osman Bazar
Tirnova
Sevlijevo
Gabrovo
Trjevna
Sliven
Kesarovo
Derbent
Novo Selo
Kamchik R.
Gulios
Emineh
Misivria
Anchialo
Burgas
Sozopolis
Karnabat
Aitos
Dobrol
Gradec
Kuskokastro
Jambol
Nova Zagora
Stara Zagora
Kezanlyk
Shipka Pass
Trojan
Ivor
Novo Selo
Tatar Pazardjik
Philippopolis
Cirpan
Radne Mahalest
Karabunar
Seimen
Karabdza
Kavakli
Kosludsha
Faklia
Goklepe
Vasilico
Arathopolis
Trnovo
Haskovo
Harmanli
Adrianople
Mustafa-Pasha
Koprusu
Hajikoi
Kirk Kilisse
Midia
Podima
Lozengrad
Injeda
Semakov
Ravelsko
Chvoina
Osmanpasalar
Dorlen
Pashmaklü
Culenan
Lotak
Pescara
Peruszica
Badni Jeles
Trnovo
Sofia
Bulgaria
Servia
Montenegro
Albania
Bosnia
Herzegovina
Adriatic Sea
Black Sea
Sea of Marmora
Belgrade
Semlin
Schendria
Gradiste
Verseez
Baya de Aranas
Temesvar River
Maros River
Arad
Csaba
Klausenburg
Maros Vásárhely
Debreczen
Grosswardein
Szamos
Körös
Sebes
Kreisch
Theiss
Danube
Save R.
Drina R.
Bosna R.
Narenta R.
Morava R.
Ibar R.
Lom R.
Ogost R.
Iskar R.
Vid R.
Jantra R.
Timok R.
Isker R.
Vardar R.
Struma R.
Maritza R.
Tundja R.
Arda R.
Kara Su R.
Ergene R.
Sarajevo
Uzice
Prijepolje
Priboj
Visegrad
Rudo
Mostar
Metkovic
Nikshi
Podgorica
Cattaro
Cetinje
Rieka
Skodra L.
Antivari
Dulcigno
Gulf of Drin
Cape Rodoni
Durazzo
Kroya
Tirana
Elbasan
Ochrida L.
Prespa L.
Monastir
Kastoria
Florina
Vodena
Salonica
Gulf of Salonica
Kavalla
Dedeagatch
Gumurdjina
Rodosto
Gallipoli
Enos
Dardanelles
Constantinople
Stamboul
Scutari
Halki
Prinkipo
Kadiköi
Bakrikoi
Baruthane
San Stefano
Halder Pasha
Ismid
Nicomedia
Brussa
Mudania
Panderma
Artaki
Gallipoli
Lemnos
Imbros
Tenedos
Mitylene
Chios
Smyrna
Aivali
Cydonia
Rhodes
Scio
Samos
Patmos
Cos
Crete
Candia
Canea
Sphakia
Suda
Retimo
Grabusa
Cape Spada
Cape Krio
Cape Matapan
Cape Malea
Cape Colonna
Cape Sunium
Cape Doro
Cape Papas
Cape Gallo
Cape Passero
Cape Spartivento
Cape Teulada
Cape Carbonara
Cape Bon
Cape Blanco
Cape Bizerta
Cape Farina
Cape Matifu
Cape Caxine
Cape Spartel
Cape Trafalgar
Cape St. Vincent
Cape Finisterre
Cape Ortegal
Cape Villano
Cape Roca
Cape Espichel
Cape Sagres
Cape St. Mary
Cape Corvo
Cape Clear
Cape Wrath
Cape Duncansby
Cape Buchan
Cape Wrath
Cape Ortegal
Cape Finisterre
Cape Roca
Cape Espichel
Cape Sagres
Cape St. Mary
Cape Corvo
Cape Clear
Cape Wrath
Cape Duncansby
Cape Buchan
Cape Wrath

ROUMANIA, SERBIA, BULGARIA, MONTENEGRO, ALBANIA, GREECE AND TURKEY IN EUROPE
SCALES.
Statute Miles, 75=1 Inch.
0 5 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
Kilometres. 121=1 Inch.
0 10 50 100 150 200
Rand McNally & Co.'s New 11 x 14 Map of Roumania, Servia, Bulgaria, Montenegro, Albania and Turkey in Europe.
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GREECE
ASIA MINOR
TURKEY
ITALY
IONIAN SEA
MEDITERRANEAN SEA
AEGEAN SEA
SEA OF MARMORA
CONSTANTINOPLE
CRETE
CYCLADES
NORTHERN SPORADES
DODECANESE
ATHENS
SALONICA
RHODES ISLAND
DURAZZO
CORFU
ZANTE I.
CEPHALONIA I.
LEUKAS (SANTA MAURA)
ITHACA I.
STRAIT OF OTRANTO
Otranto
Brindisi
Lecce
Valona
Prevesa
Arta
Patras
Gulf of Corinth (Lepanto)
Gulf of Patras
Gulf of Salonica
Gulf of Rendina
Gulf of Saros
Gallipoli
Dardanelles
Lemnos I.
Imbros I.
Thasos I.
Samothraki I.
Mt. Athos
Mt. Olympus 9,754
Mt. Karava 8,668
Mt. Kissavos 6,408
Mt. Parnassus 7,060
Mt. Lasithi
Mt. Ida
Mt. Pindus
Mt. Taygetus
Mt. Olenos
Mt. Skopelos
Mt. Skyros
Mt. Kynthos
Mt. Mycale
Mt. Messogis
Mt. Phrygia
Mt. Ida
Mt. Cybele
Mt. Olympus
Mt. Ossa
Mt. Pelion
Mt. Othrys
Mt. Oeta
Mt. Parnassus
Mt. Helicon
Mt. Cithaeron
Mt. Pentelikon
Mt. Hymettus
Mt. Parnes
Mt. Geraneia
Mt. Chelmos
Mt. Lycaeum
Mt. Taygetus
Mt. Ithome
Mt. Lycaeum
Mt. Cithaeron
Mt. Helicon
Mt. Parnassus
Mt. Oeta
Mt. Othrys
Mt. Pelion
Mt. Ossa
Mt. Olympus
Mt. Cybele
Mt. Phrygia
Mt. Messogis
Mt. Mycale
Mt. Kynthos
Mt. Skyros
Mt. Skopelos
Mt. Olenos
Mt. Taygetus
Mt. Lasithi
Mt. Ida
Mt. Olympus
Mt. Karava
Mt. Kissavos
Mt. Parnassus
Mt. Taygetus
Mt. Pindus

geological and geostratic connections are hard to determine. There are numerous thermal and sulphurous springs, some of which are renowned and utilized as sanitary watering places. The mountains form the watershed separating the tributaries of the lower Danube and those of the Vardar and Maritza rivers, or, in other words, the watershed between the Black Sea and the Ægean. On account of the broken and irregular character of the peninsula the rivers are short and little navigable. Albania, separated from Montenegro and Novibazar by the north Albanian Alps, is a mass of parallel mountain ranges, irregularly transversed by the winding rivers, Boyana, Drin, Loum, Voiutza and Arta, which flow into the Adriatic and Ionian seas. In Scutari, Monastir and Salonica there are a number of large and deep lakes, pre-eminently those of Scutari, Ochrida, Janina, Prespa and Kastoria. The climate of the peninsula is exceedingly varied; it is rigorous with heavy snowfalls in the north and the central plateau between Serajevo (Bosnia) and Sofia (Bulgaria), and the tableland of Janina, but becomes mild and sunny toward the south and east, tempered by the breezes of the Ægean. There is hardly any country in the world inhabited by such a number of different peoples as the Balkan Peninsula. Surviving there are all the races recorded at the beginning of history, with their national languages and distinct racial consciousness. They do not form, however, the whole people, or even the great majority of their particular race in any one district, but are intermingled and live side by side, without ever blending together, so that the process of disentangling their various and conflicting aspirations, tendencies and racial as well as religious distinctions, is well-nigh impossible. The majority are Slavs, comprising the Bulgarians in the east and centre, the Serbs and Croats in the west, and, in the extreme northwest, between Trieste and Laibach, the Slovenes; these compose the southern branch of the Slavonic race. The other inhabitants of the peninsula are the Albanians in the west, the Greeks in the south, the Turks in the southeast and the Rumanians to the north. In southern Bulgaria (ancient Thrace) and Macedonia, there may be found a Greek, a Bulgarian, a Turkish, an Albanian village, side by side. The Greeks or Byzantines, the Daco-Rumanians, who speak a distinctly Romance or neo-Latin language, and proudly derive their origin from the legionaries of Emperor Trajanus stationed in Dacia, yet undoubtedly from Dacian or Thracian mothers,—and the Albanians of Illyrian stock are the most ancient historic races of the Balkans. The Slavs are latecomers by migration and conquest. They became neither Greek nor Roman in speech or customs, political character or national proclivities, but remained distinctive in language and racial characteristics. Between the Danube and the Ægean Sea the whole of the eastern part of the Balkan Peninsula was known as Thracia; the western part as Illyricum and the lower basin of the Vardar River as Macedonia, some centuries before the Christian era. At periods historically well determined, after the Gothic invaders in those regions had been defeated or absorbed or started on their world-stirring career, after the Turanian Avars had lost their overwhelming power, the Slavic tribes moved in great numbers into central and southeastern Europe. About 630 A.D. the Croats began to occupy the present Croatia, Slavonia, northern Bosnia. In 640 the Serbians of the same race and language conquered the Avars and peopled Serbia, South Bosnia, Dalmatia; Montenegro, whose inhabitants are pure Serbs in blood and language, only deriving their name from their national hero, Ivo the Black (Tsernoi), who gave the name of Tsernagora (Montenegro) to those desert rocks, a safe retreat to the Serbians, after their defeat at Kossovo in 1389 inflicted by the Turks. The ethnic situation of to-day dates from that epoch. The origin of the Bulgarians is not quite clear. They appear to be of Finnish-Ugrian stock, and therefore related to the Turks and the Hungarians, but were Slavicized early in history. The great apostles of the Slavs, Methodius and Cyrillus, themselves Bulgarians, even brought Byzantine culture and the Greek-orthodox religion to the other Slavic races on the peninsula. The battle of Kossovo, already mentioned, made an end to the independence of the highly developed Slavic states, and with the fall of Constantinople in 1453, the last bulwark of the crumbling Byzantine empire, the Turkish or, more correctly, Osmanli sway over the entire Balkan Peninsula became a reality. Four centuries of racial strife between the Turkish conquerors and the various Greek, Rumanian and Slavic races under their sway resulted in the formation of the Danube states and the Hellenic kingdom, more or less according to races and nationalities, so far as this was possible at all in the case of peoples which are at least as far removed in sympathy and political aspirations from one another as they are from the Turks. The racial antagonisms were always grievously accentuated in the attempted solutions of racial, political and religious problems. While the ancient history of the Balkan Peninsula is bound up with that of the Roman and Byzantine empires, the Middle Ages reveal an unbroken series of invasions and wars for a period of almost a thousand years up to 1453. Within a century of their appearance in the Balkan Peninsula, the Osmanlis had established the most civilized and best ordered state of their time. But succeeding generations of the Osmanli "Turks" lost the virtues of their ancestors, and retained only their capacity for governing under military law. They never learned to rule as civilians nor forgot how to rule as soldiers. During the 28 years of his life after the capture of Constantinople, Mohammed II annexed the whole Balkan Peninsula except the inaccessible Black Mountain (Montenegro), the Albanian highlands, and the then Hungarian fortress of Belgrade. That enlightened monarch showed marked favor to Christians and bestowed the higher offices of state upon them; he encouraged literature, art and commerce. The Venetians held a virtual monopoly of the Euxine (Black Sea) and Ægean trade, while both in Asia and Europe the social condition of the peasantry was better at the time under Osmanli rule than feudal Christendom. The Ottoman army had the best reputation in the world; it was the first to introduce efficient commissariat and medical services, and adventurers from all parts of Europe flocked to learn the art of war from the Turks. But

the three immediate successors of Mohammed II sowed the seeds of decay and disruption by misrule and oppression, while a revival of the dormant crusading spirit of Europe only served to reawaken the slumbering fanaticism that characterized the early followers of the Prophet.

Yet the Ottoman empire continued to grow in territory and splendor, attaining the zenith of its glory in the reign of Suliman the Magnificent (1520–66). At the battle of Mohacs (1526) he conquered Hungary, and three years later stood at the gates of Vienna. It was at Mohacs again that the tables were reversed 161 years later against Suliman II by the Austrians under Charles of Lorraine. That decisive victory pushed the Turks back upon the Balkan Peninsula and drove the first nail into the coffin of Turkish dominion in Europe. During the 17th century Russia and the kingdom of Poland also joined the ranks of Turkey's enemies in coalition with Austria, Tuscany, Venice, Malta and the papal forces. The treaties of Carlowitz and Constantinople (1699–1700) brought about a rearrangement of territories and frontiers by which Turkish power in Europe received a severe check. The wars conducted by Austria and Russia against Turkey during the 18th century, followed in 1799 by the alliance between Turkey, Russia and Great Britain against Napoleon, kept the Ottoman rulers and statesmen preoccupied with international affairs and permitted the development of revolutionary aspirations among the subject races of the Balkan Peninsula. The 19th century witnessed remarkable political changes in that stormy region. By a course of wars, revolutions, brigandage and appalling atrocities the grip of the Turk was gradually loosened through the intervention of the powers. Greece was the first to break away in 1829; the Berlin Congress (1878) erected Rumania, Bulgaria, Serbia and Montenegro into semi-independent states under a shadowy suzerainty of the Sultan. The history of these events is related under the headings of the various countries. The Balkan Wars (q.v.) formed what may be the last act but one in the 400 years' struggle to expel the Turk from Europe. The Balkan Peninsula has played a tremendous part in the world's history, and has well earned the various uncomplimentary titles applied to it, such as the "slaughter-house," the "cock-pit," the "bug-bear" and the "powder magazine" of Europe. For many centuries not a year has passed without bloodshed somewhere on its soil. The scene of many brilliant exploits and unexcelled horrors, it arrayed nation against nation, caused innumerable wars and was finally to be the cradle of the greatest conflict of all time. See WAR, EUROPEAN. Also ALBANIA; DARDANELLES; GREECE; MONTENEGRO; SERBIA; TURKEY; EASTERN QUESTION.

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*Librarian London Times,* 1898–1905; *Editorial Staff London Standard,* 1905–15.

**BALKAN WARS,** a series of conflicts fought in the Balkan Peninsula (q.v.) during 1912 and 1913. They fall into three distinct divisions: (1) The war of the Balkan League (q.v.), composed of Bulgaria, Serbia, Greece and Montenegro, against Turkey, in which the Allies conquered Macedonia, Albania and the greater part of Thrace, terminating with the armistice of December 1912; (2) the continuance of the war by Greece and the resumption of hostilities by her Allies in February 1913, after the failure of the London negotiations; (3) the second war, which followed the collapse of the Balkan League in June 1913, when Serbia, Greece and Montenegro were arrayed against their quondam ally, Bulgaria; the re-entrance of Turkey and the intervention of Rumania. The avowed object of the Balkan League was the emancipation of Macedonia from Ottoman dominion and the forcible expulsion of Turkey from eastern Europe. Ever since the Treaty of Berlin in 1878 the Christian population of Macedonia — mainly Bulgars, Greeks and Serbs — had been promised reforms by both the European Concert and by successive Turkish governments. By the Treaty of San Stefano (3 March 1878) which Russia forced upon Turkey at the point of the sword, Macedonia was handed over to Bulgaria, but the arrangement was abrogated four months later at Berlin and the territory restored to Turkey, the powers pledging themselves to supervise the introduction of reforms. For 34 years the powers had tinkered at the problem, and for 31 years of that period Abdul Hamid II (q.v.) had pursued an unwavering policy of promises and evasions. Hope dawned momentarily on the horizon when the Turkish revolution of 1908–09 ended with the victory of the Young Turkey party, the downfall of Abdul Hamid and the accession of Reshad Effendi as Mohammed V. But although the new ruler expressed his satisfaction at being the first sultan of a régime of liberty and told his Parliament that "the safety and happiness of the country depend on the constant and serious application of the constitutional régime," which was "in conformity with the Sacred Law as with the principles of civilization," it soon became apparent that the more Turkish government changed the more it was the same thing. Toward the end of 1909 steps were taken to "pacify" Macedonia. In the process of pacification the Turkish commander entrusted with the task, Torgut Pasha, accounted for 12,000 prisoners, 5,000 killed and wounded, 2,000 refugees in Bulgaria and over 1,600 homeless refugees scattered among the hills. The Young Turk government, the "Committee of Union and Progress," adopted a "nationalizing" program that consisted mainly of stamping out all racial and religious sentiments differing from undiluted Turkish citizenship. This ruthless policy led the Balkan states to sink their quarrels and to unite for common action against the oppressor. But the motives actuating the Balkan League were not entirely altruistic: there were rich prizes to be gained if the venture should prove successful.

In the meantime the Turco-Italian War (q.v.) had broken out in the fall of 1911. A succession of defeats was suffered by the Turkish armies, seriously weakening the resources and organization of the Turkish empire and undermining what little influence it still possessed in its European provinces. The moment for action in order to bring about the liberation of Macedonia, Albania and the other parts of European Turkey had apparently arrived with the most favorable conditions.

In March 1912 a secret treaty of alliance was signed between Bulgaria and Serbia against Turkey, stipulating military co-operation between the two states on a fairly extensive basis and providing for the division of whatever territory might accrue as the result of a possible — and successful — war. A similar treaty against Turkey was signed between Bulgaria and Greece in September 1912, except that no provision was made for possible future gains. Montenegro and Serbia, too, had arrived at an understanding, and finally these diplomatic arrangements were so co-ordinated that they permitted of concerted military action on the parts of Bulgaria, Serbia, Greece and Montenegro as against the hereditary enemy, Turkey.

As early as 5 Aug. 1912, engagements between isolated detachments of Montenegrins and Turks had broken out, and on 8 August the Turkish minister to Montenegro left Cettigne, the capital. The situation had now become so threatening that Count Berchtold, the Austro-Hungarian Foreign Minister, extended an invitation on the 16th to the European Powers to join in "conversations" regarding the Balkan problem. France, Germany and Great Britain accepted immediately, but it was too late. The Balkan states proceeded with their military preparations, and on 30 September the four members of the Balkan League ordered a general mobilization of their forces. But the Turkish government was not unprepared. For some time previously large bodies of troops had been collecting in Thrace, ostensibly for "maneuvres." Turkey followed with a mobilization order on 1 Oct. 1912, at the same time confiscating about 150 Greek boats which were then in various Turkish ports. An attempt to avert war, made by Premier (afterward President) Poincaré of France by suggesting a joint intervention by Russia and Austria-Hungary proved unsuccessful. Montenegro, being practically always under arms, was the first to complete mobilization, on 7 Oct. 1912, and on the next day declared war on Turkey. It is generally believed that this step was taken without consulting the other allies. The Black Mountaineers forcibly occupied the Mojkovatz district, which, though assigned to them by an agreement of the previous year, had remained in the occupation of the Turks. A general conflagration was now inevitable, for not only the Allies, but the Turkish government also, had rejected the mediatory proposals of the

powers. The Grand Vizier had informed the latter that Turkey would not tolerate foreign intervention in her internal affairs, but offered, at the eleventh hour, to revive the Law of the Vilayets framed 1880 by an international commission, but never carried out. The Allies rejected the offer as insincere and demanded guarantees, which were not forthcoming. On 13 Oct. 1912 Bulgaria, Serbia and Greece presented a joint ultimatum to the Porte, demanding reforms in Macedonia within six months and immediate demobilization of the Turkish armies in the Balkans. These demands were refused on the 17th; to the great surprise of Europe, Turkey had made peace with Italy on the 15th, and now not only declined to negotiate further with the Allies, but declared war on Bulgaria and Serbia. In the case of Greece, Turkey attempted to win this country over, but met with a refusal followed, the same day, 17 October, by a declaration of war on the part of Greece against Turkey.

At the beginning of the war the Bulgarian forces consisted of eight regular divisions, one cavalry division and numerous reserve organizations. Their total strength was approximately 340,000 men and 800 guns, divided into three armies under Generals Kutincheff, Ivanoff and Dmitrieff. The supreme command was in the hands of General Savoff. The Serbian forces consisted of four armies, totaling about 250,000 men and 450 guns. They were commanded by the Crown Prince and Generals Putnik, Stefanovitch, Yankovitch and Zikhovitch. Greece had put in the field about 150,000 men, commanded by the Crown Prince and Generals Danglis and Sapuntsakis. Prince Danilo was in chief command of the Montenegrin forces, consisting of some 30,000 men in three groups. Against this total of over 750,000 men Turkey mobilized three armies and a number of smaller organizations amounting to about 450,000 men and more than 600 guns. They were directed by Abdullah Pasha, Zekki Pasha, Hassan Tahsin Pasha, Essad Pasha, Hassan Riza Pasha and Ali Riza Pasha, with Nazim Pasha in supreme command. Greece and Bulgaria were the only countries of the Balkan League possessing naval forces, the former one modern cruiser, 21 torpedo boats and one submarine; the latter six torpedo boats.

The first successes over the Turks were gained by the Montenegrins. They attacked on 9 Oct. 1912 near Podgoritza and captured the Planinitza and Detchitch mountains. The Bulgarian advance began immediately war had been declared. By 19 October the Second army had occupied Mustapha Pasha on the Turco-Bulgarian frontier, and from there proceeded to close in against Adrianople from the north and west. The First and Third armies advanced against the fortress of Kirk Kilisse northeast of Adrianople. The Turks attempted to oppose this advance with a force of 70,000 men and a very sanguinary battle was fought north and northwest of Kirk Kilisse 22–24 October. On the latter date Kirk Kilisse fell to the Bulgarians with large booty and the Turks were forced to retreat in disorder. They finally established themselves on a fortified line of about 20 miles between Bunar-Hissar in the north and Lule Burgas in the south. This was later shifted so that the right wing rested on Visa instead of Bunar Hissar. The Bulgarians followed and attacked on 29 Oct. 1912. In position, guns, equipment and *moral* the Bulgarians had the advantage over their opponents. The battle lasted for three days. Though making a valiant stand the Turks were forced back everywhere; by 4 November they had fallen back to a new line with Chorlu as its centre. But the Bulgarian advance was irresistible and this position had to be abandoned by the Turks on 7 November. Realizing the danger of Constantinople being threatened the Turkish government had already, on 3 November, appealed to the European Powers for mediation. The Turks meanwhile retreated within the so-called Chataldja lines, a series of strongly fortified positions running about 20 miles west of Constantinople, from the Sea of Marmora to the Black Sea along a chain of heights. It was not till 13 November that the Turkish retreat and establishment at Chataldja was completed. The Bulgars had apparently stretched their resources to the utmost in driving the Turks back thus far, as they made no further move of importance for several days. This brief respite enabled the Turks to reorganize and strengthen their weakened ranks by reinforcements from their Asiatic armies, but a serious outbreak of cholera among the troops served to hinder the measures of reconstruction. On the 17th the First and Third Bulgarian armies began an attack on the Turkish lines. In some instances the attack succeeded, but the natural strength of the position plus the assistance rendered by the Turkish fleet on the southern flank was more than the Bulgarians could overcome. The latter therefore withdrew their forces to the west of Chataldja village and contented themselves with making impossible any Turkish advance.

The Second Bulgarian army which at the beginning of the war had advanced against Adrianople attacked this city on 22 and 23 Oct. 1912, but had been unable to carry any of the important defensive works. The right wing of the First Bulgarian army, however, was pushed on 23 October to the Tunja Valley north of Adrianople; by the 29th its left wing had reached the Maritza Valley south of Adrianople. The fortress was now completely surrounded. Still another Bulgar force had crossed the Rhodope Range and inflicted a defeat on the Turks at Kirjali on 20 October. Part of this force then advanced and joined the other Bulgarian troops before Adrianople. A special division under General Todoroff in the meantime had invaded Macedonia along the Struma and Mesta vallies, captured the Kresna defile and occupied Buk on the Salonica-Dedeagatch Railroad. This move completely severed the western from the eastern Turkish army. General Todoroff then advanced on Demir Hissar and from there to Salonica; on his arrival, however, that city had already capitulated to the Greeks. Other detachments of his forces occupied Kavalla 15 November and Serres on the 20th. After the victory at Kirjali the Bulgars pursued the Turks in the direction of Jumuljina, captured this town on 22 November and finally forced the Turks who had made a stand north of the village of Merhanli to surrender on 27 November, taking 12,000 prisoners.

The siege of Adrianople in the meantime

had been carried on without any definite results. Almost 50,000 men of the First and Second Serbian armies had joined the Bulgars in the beginning of November 1912, but even the combined forces still possessed insufficient artillery to compel surrender. Every attempt of the Turks to break out, however, was repelled. Coincident with these Bulgarian successes were equally important successes on the part of the Serbian armies. On 19 Oct. 1912 they crossed the frontier and after a two days' battle inflicted a severe defeat on the Turks near Kumanovo on 24 Nov. 1912. Strazim was occupied on the 22d, Kratovo on the 26th, and on the same day Uskub was abandoned by the Turks, who were so demoralized that they left behind some 120 guns and large quantities of stores and munitions. Both the Third and Fourth Serbian armies had been equally successful. Mitrovitza and Prishtina were taken on 22 Oct. 1912, Novi Bazar on 27 October, Plevlje on the 28th and Nova Varosh on 5 November. After the fall of Uskub the Serbians pushed the Turks further back toward Monastir. Doiran was taken on 5 November and Salonica, already in the hands of the Greeks, was entered by the Serbs on the 8th. Perlepe, on the road to Monastir, was occupied 6 November after a two days' battle. Two divisions of General Yankovitch's army were dispatched in the middle of November across the snow-covered mountains toward the Adriatic Sea. They captured Alessio 18 November and reached Durazzo on the 28th (1912). Five divisions of the First Serbian army supported by other detachments resumed their attacks on the Turks in the vicinity of Monastir. After a battle lasting four days the Turks were completely routed and Monastir was occupied by the Serbs. Most of the Turkish troops were either killed or captured, and only small bodies succeeded in escaping toward the south.

The Montenegrin forces throughout October and November 1912 were chiefly occupied in operations in northern Albania which finally resulted in the complete investment of Scutari. Although the Turkish troops caught there were prevented from breaking out, the artillery at the disposal of the besiegers was too feeble to reduce the place. During seven weeks of the war the Montenegrins, though fighting with great valor and determination, and defeating the Turks in almost every encounter, only succeeded in capturing Tuzi (14 October), Berane (16 October), Ipek (31 October), and the insignificant harbor of San Giovanni di Medusa (16 November). When in the middle of November Serbian detachments appeared in central Albania a Montenegrin brigade was sent south to co-operate with them, but before the end of the month was recalled to assist in the siege of Scutari. Hence, when the armistice was signed, Scutari, the objective of the whole Montenegrin campaign, still remained in the hands of its Turkish garrison.

The Greeks, from the commencement of the war, had made the capture of Salonica their chief aim. Crossing the frontier on 18 Oct. 1912, they captured Elassona on the 19th, decisively defeated the Turks on the 22d at the Sarantoporos Defile, captured Serfije on the 23d and Verria on 29th. As the Greeks approached nearer and nearer to Salonica the Turks made one more attempt to make a stand along the line between Yenidje Vardar and Plati bridge. But the effort proved fruitless, and on 8 Nov. 1912, Hassan Tahsin Pasha saw himself compelled to surrender Salonica with its garrison of about 30,000 Turkish troops to the Greek Crown Prince. Five Greek divisions were now detached to assist the Serbian troops fighting near Monastir, where they arrived in time to capture large numbers of Turks who had attempted to flee southward after their defeat before Monastir. During December the main army of the Greeks advanced toward Janina after beating the Turks at the Sangoni Pass. Previous to this the western Greek army had come up from the south by way of Arta, captured Prevesa, a small fortress, on 4 November, Mount Metsovo on the 14th, and reached the vicinity of Janina on 28 Nov. 1912. Throughout December 1912 the Greeks unsuccessfully endeavored to capture this town, though they had no difficulty in repulsing every attempt of the Turks who assumed the offensive.

Naval operations during October, November and December 1912 were restricted chiefly to the Greek fleet. Wherever opportunity offered Greek destroyers assisted their military forces. The main body of the fleet, however, was occupied with the blockade of the Dardanelles and with the capture of the islands of Lemnos, Thasos, Imbros, Samothrace, Tenedos, Ikara, Psara, Chios and Mitylene. The Turkish fleet was primarily engaged with transporting reinforcements from Asia to Europe. It also attempted, with more or less success, to blockade the Bulgarian coast on the Black Sea. In November it was of considerable value in defending the Chataldja lines. One Turkish cruiser was seriously damaged on 21 November before Varna by a Bulgarian torpedo and another was sunk by a Greek torpedo boat on 31 October in the harbor of Salonica.

The Turkish appeal to the powers for mediation (3 November) met with no favorable response. On 13 Nov. 1912 Turkey approached Bulgaria for the purpose of opening peace negotiations. For approximately a week military operations were more or less suspended but when on 21 November Turkey declined to accept the conditions demanded by Bulgaria and her allies hostilities were reopened. Nevertheless, representatives of the belligerents continued to meet a few days later before the Chataldja lines, and on 3 Dec. 1912 an armistice was signed between Turkey and Bulgaria, Serbia and Montenegro. Greece alone declined to be a party to this arrangement As a result representatives of the four parties to the armistice met in London, 16 Dec. 1912, to consider the possibility, in the presence of the ambassadors of the Great Powers, of a settlement of the Balkan question. Sir Edward (now Viscount) Grey, the British Foreign Minister, presided at the conference. Bulgaria demanded Adrianople; Greece insisted on the cession of all the Ægean Islands; and all the Allies demanded an indemnity from Turkey. The Turkish emissaries rejected all of these demands, and on 6 Jan. 1913 the Allies withdrew from the negotiations. In order to avoid if possible the resumption of hostilities which threatened more and more to involve all Europe, the powers

combined in a note to Turkey advising the cession of Adrianople and suggesting that the settlement of all the other questions be left in the hands of the powers. The utter impossibility of returning to the status quo ante was voiced by Mr. Asquith: "The map of eastern Europe has to be recast. . . . Upon one thing I believe the general opinion of Europe will be unanimous — that the victors are not to be robbed of the fruits which have cost them so dear" (9 Nov. 1912). By 22 Jan. 1913 appearances indicated that Turkey would yield to the inevitable, but on the next day a revolution suddenly broke out in Constantinople. Nazim Pasha, Minister for War, was assassinated, and hostilities were resumed a week later.

The position of Turkey was indeed desperate. Of all its former great possessions in Europe nothing was left beyond the small stretch of land between the Bosporus and the Chataldja lines, and the three fortresses of Adrianople, Janina and Scutari. These latter were so closely invested by the superior forces of the Balkan Allies that all hope of escape for them seemed to be cut off. Every attempt to push back the invaders over the Chataldja lines was repulsed, a fact that was not sufficiently counterbalanced by the strength shown by the Turkish lines which held firm against every Bulgarian assault. On 6 March 1913 Janina surrendered to the Greeks with its garrison of 30,000 men. The Turkish position at Adrianople became more and more untenable; famine and lack of ammunition gradually weakened the resistance in the last and most important Turkish stronghold west of the Chataldja lines. Bulgars and Serbs made a series of determined assaults on the fortress; on 9 March two important forts were stormed and finally, on 26 March, Shukri Pasha, in command at Adrianople, had no other alternative than to capitulate with 33,000 men.

In the meantime the Montenegrins had valiantly continued their attacks on Scutari. They found, however, that in their operations in Albania they had to contend not only with Turkish resistance, but also with the conflicting interests of Serbia supported by Russia and of Italy supported by Austria-Hungary. These powers arrived at an understanding over the future of Albania and, on 20 Dec. 1912, had announced their acceptance of the principle of Albanian autonomy and of Serbian right to free commercial access to the sea. To determine the frontiers of the new state to everyone's satisfaction was more difficult. But an agreement was finally reached on 26 March 1913. Serbia received some of the Albanian territory adjacent to Montenegro and Scutari was to become part and parcel of the new state. Both of these arrangements were considered by Montenegro unjust; the little mountain state flatly refused to acquiesce in the arrangement in spite of immense pressure brought to bear by all the European Powers, in spite of the withdrawal of such Serbian forces as assisted in the siege of Scutari, and even in defiance of an actual blockade of the Montenegrin coast instituted by all the powers except Russia, in April 1913. Montenegro's persistence had its reward in the capitulation of Essad Pasha and Scutari on 22 April 1913. However, she was to enjoy the fruit of her victory but a short time. Austria-Hungary and Italy made such strong representations that the agreement of 26 March should be fulfilled, that Russia, in view of a possible intervention by these two powers, exerted powerful pressure on Montenegro to evacuate Scutari. This was done on 14 May 1913, and Scutari was occupied by sailors from the international fleet.

Contemporaneously with the events just described, the European Powers were exerting themselves to bring about peace, not, it must be confessed, in the interests of either Turkey or her enemies. Excepting Germany, who had other objects in view, not a single European country regarded the expulsion of the Turk with anything but satisfaction. The great danger, however, lay in a possible conflict among the powers themselves, according to which side they favored. What centuries of great wars and diplomacy had failed to achieve had been accomplished by the little Balkan states in a few weeks; the Turk had been brought to his knees. Hence the powers had persuaded, first Turkey, on 1 March 1913, and then the Allies on the 15th, to accept their mediation. An armistice was signed between Turkey on the one part, and Bulgaria, Serbia and Greece on the other, at Bulair on 19 April 1913. With the fall of Scutari three days later, Montenegro also became a party to the armistice. When the Montenegrins had evacuated Scutari the way to a peace conference lay clear. Representatives from all the nations involved met again in London 21 May 1913. Representatives of the Powers, Great Britain, France, Russia, Austria-Hungary, Germany and Italy were also present and hastened the proceedings to such an extent that as early as 30 May the Treaty of London was signed by all the belligerents. It provided that the Turkish possessions in Europe should be bounded in the west by a line drawn from Midia on the Black Sea to Enos on the Ægean Sea, the details to be arranged by an international commission; that the powers were to determine the boundaries of the newly-created state of Albania and the future status of the Ægean Islands; that Crete was to be ceded by Turkey to Greece; and that all financial questions were to be settled by an international commission to meet as soon as possible at Paris.

Unfortunately, the Treaty of London did not decide what was, to the victorious allies, the most vital point of all: the division of the territory wrested from the Turk. Even before that treaty had been signed, ill-feeling of the strongest kind had sprung up between Bulgaria and Serbia, and Bulgaria and Greece. Secret treaties which had been signed before the outbreak of the war were denounced as void owing to "changed conditions." The military forces of each separate country, both during the armistice and the session of the peace conference, were quietly engaged in occupying as large sections of territory from which the Turks had been driven as they could cover. Recriminations of every type, not unmixed with physical violence, were indulged in by the former allies. The natives were the greatest sufferers; Serbians slaughtered Bulgarian civilians by the thousand and Bulgarian troops butchered Serbian civilians. Military collisions occurred frequently during March,

April and May. Further trouble was fast brewing. The powers demanded, 6 June 1913, that the Balkan states demobilize; they refused. On the 10th Serbia demanded from Bulgaria a revision of the ante-bellum treaty of alliance. Russia threw her moral influence on the side of Serbia, while Austria-Hungary was clearly more friendly to Bulgaria. The latter country refused to revise the treaty, and on 22 June the Serbian Minister left Sofia.

The alliance was thus dissolved; Thrace and Macedonia were again to be devastated by the very warriors who claimed to have been fighting for the regeneration of both. Hostilities began on 30 June 1913; Serbs and Bulgars met at Slatovo in a three-days' unofficial battle; eight days later Serbia, Greece and Montenegro declared war on Bulgaria. Meanwhile there had arisen a new adversary whom Bulgaria had to face, Rumania. This most northern of the Balkan states which had so far remained neutral announced to Bulgaria that she required certain guarantees of compensation if she were to maintain her neutrality in a new Balkan war. The demand was not met promptly enough, and early in July 1913 Rumania ordered a general military mobilization. On the 10th she also declared war on Bulgaria, who was now pressed from all sides. Rumania invaded Bulgaria from the north, occupied Turtukai and Baltchick and began to advance against Sofia. In the southwest the Greeks seized the railroad between Doiran and Dedeagatch and were marching up the Struma Valley en route for Sofia. In the west the Serbs and Montenegrins were advancing against Kotchana and Kustendil, with Sofia also as their ultimate objective. Turkey, too, now became active again. The Bulgarians had naturally been compelled to withdraw their troops still lying before the Chataldja lines. The astonished Turks immediately advanced under Enver Bey against Adrianople and calmly reoccupied the city without opposition, 22 July 1913.

The Rumanians were now only 20 miles from Sofia; the Greeks and Serbs not much further away; fighting desperately, the Bulgars found themselves in an iron ring growing ever smaller. Recognizing the hopelessness of resisting the combination against him, King Ferdinand yielded. His request for mercy was favorably received by his opponents, and delegates from all belligerents met at Bucharest 29 July 1913. It was fortunate that this third Balkan war came to a quick end, for all of the combatants had displayed the most wanton ferocity and committed unspeakable atrocities. The peace meeting resulted in a treaty signed 10 Aug. 1913, by which Rumania kept the two towns she had taken from Bulgaria, and territory amounting in all to 2,969 square miles, with a population of 273,000. Serbia deprived Bulgaria of Kotchana, Ishtib and Radovishta; Greece took away Salonica, Doiran, Demir Hissar, Seres, Drama and Kavala; Monastir also became Serbian while Greece retained Vodena and Florina. Serbia rewarded Montenegro by giving her Plevlje, Byelopolye, Ipek and Diakova.

In settling her boundary disputes with Turkey, Bulgaria also lost as a result of the third Balkan war. Turkey absolutely refused to evacuate the territory which she had reoccupied during July 1913, or to live up to the Treaty of London. None of the powers seemed to insist that she should do so, and Bulgaria was not in a position to fight it out with Turkey. Finally on 29 Sept. 1913, the Treaty of Constantinople fixed the frontiers so that the Enos-Midia line of the other treaty acquired such a spinal curvature that it retained for Turkey Demotika, Adrianople and Kirk Kilisse. As the last of this series of treaties Greece and Turkey signed the Treaty of Athens on 27 Nov. 1913, by which the various religious, racial and financial questions arising from the war were settled. The fate of the newly-created state of Albania had also been settled by the powers; its boundaries had been agreed upon and an international commission, located at Valona, assumed its government on 1 Oct. 1913. Later in the month they selected a German prince, William of Wied, and appointed him "Mpret of Albania." See BALKAN LEAGUE; ALBANIA; BULGARIA; SERBIA, etc.

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**BALKH**, bälkh, Afghan Turkestan, a district corresponding to ancient Bactria, and is bounded on the north by the river Oxus, on the east by Badakhshan, on the south by the Hindu Kush and west by the desert. Its length is 250 miles; its breadth 120. Its situation was once important during the overland commerce between India and eastern Europe before the sea route by the Cape of Good Hope was followed. The soil has the general characteristics of a desert land; only a few parts are made fertile by artificial irrigation; and such are the vicissitudes of climate that where grapes and apricots ripen in summer and the mulberry-tree permits the cultivation of silk, in winter the frost is intense and the snow lies deep on the ground. The natives are Uzbegs, whose character differs in different districts, from plunderers of caravans to tillers of the soil and artisans.

**BALKH**, Afghan Turkestan, the capital of the district of the same name, situated in a district intersected by canals and ditches. It is surrounded by a mud wall; but though bearing the imposing title of "Mother of Cities," it has not in recent times had any of the grandeur of ancient Bactria, on the site of which it is built. It was twice destroyed by Genghis Khan and Timur. A terrible outbreak of cholera in 1877 caused the capital of Afghanistan Turkestan to be transferred to Mazar, west of Balkh; since which Balkh has been an insignificant village. It contains a mosque, a citadel and several half-ruined schools. It is reputed to have been at one time the centre of the Zoroastrian religion. There is a new town of the same name a short distance to the north of Balkh. Pop. about 8,000.

**BALKHASH**, bäl-käsh', a great inland lake on the eastern border of Russian Central Asia. Lying about 780 feet above sea-level, it extends 323 miles west-southwest; its breadth at the west end is over 50 miles; at the east from nine to four miles; the area is 8,600 square miles. The water is clear but intensely salt. Its principal feeder is the river Ili. The northern edge is well defined; but the south shores of the lake are labyrinths of islands, peninsulas, low sandhills and strips of shallow water. Here grow masses of enormously tall reeds in which wild swine shelter. To the south, stretching toward the base of the Alatau Mountains, is a vast steppe almost devoid of vegetation. Balkhash seems to have at one time included in its immense area the smaller lakes Sossik-kul and Ala-kul, now far to the southeast.

**BALKIS**, the Arabian name of the Queen of Sheba who visited Solomon. She is the central figure of innumerable Eastern legends and tales.

**BALL, Elmer Darwin**, American entomologist: b. Athens, Vt., 21 Sept. 1870. He was educated at Iowa State College and the Ohio State University. In 1895–97 he was assistant in zoology and entomology in Iowa State College; in 1898–1902 associate professor of zoology and entomology at the Colorado Agricultural College. From 1902 to 1907 he held the same chairs at the Utah Agricultural College and in the latter year was appointed director of the Utah Experiment Station. In 1909 he became director of the School of Agriculture of the Utah Agricultural College and in 1910 was president of the Utah Academy of Science. He is a member of the Entomological

Society of America and many similar learned bodies. He has written numerous systematic and life-history studies of *Cercopidæ Jassidæ* and *Fulgoridæ*, economic studies of the codling moth, grasshoppers and sugar-beat leaf hopper, causing "curly leaf"; also studies on poultry-breeding.

**BALL, John,** English priest of the 14th century. He was a disciple of Wycliffe, upon whose religious doctrines he engrafted some political theories resembling the "liberty, equality and fraternity" of later ages. He was several times imprisoned for his indiscreet utterances and twice excommunicated. He was intimately concerned in the Wat Tyler insurrection of 1381 and for his part in the affair was hanged, drawn and quartered at Saint Albans, 15 July 1381, the King witnessing the execution. Consult Morris, 'The Dream of John Ball' und 'Dictionary of National Biography' (London 1885).

**BALL,** Sir **Robert Stawell,** distinguished English astronomer: b. Dublin, 1 July 1840; d. Cambridge, 25 Nov. 1913. In 1865 he was appointed Lord Rosse's astronomer at Parsonstown. While there he discovered four spiral nebulæ. He has held many posts in connection with astronomy and mathematics, including those of professor of applied mathematics and mechanism at the Royal College of Science for Ireland; Andrews professor of astronomy in the University of Dublin; astronomer-royal of Ireland from 1874 to 1898 and was engaged in measuring the distances of the stars from the earth. Meanwhile he wrote an important work on the mathematical theory of screws, a subject which he popularized at the British Association meeting of 1887 in an address entitled "A Dynamical Parable." Ball had a happy gift of simplicity and could make abstruse problems not only comprehensible but even interesting to young people. He was Lowdean professor of astronomy and geometry in the University of Cambridge and director of the Cambridge Observatory since 1892. The Royal Society elected him a fellow in 1873 and in 1886 he was knighted. His works include 'The Story of the Heavens' (1885); 'Time and Tide' (1889); 'Star-Land' (1889); 'The Story of the Sun' (1893); 'Great Astronomers' (1895); 'The Earth's Beginning' (1901); 'Popular Guide to the Heavens' (1905); etc.

**BALL, Thomas,** American sculptor: b. Charlestown, Mass., 6 March 1819; d. Montclair, N. J., 1911. He was the son of a house-painter and undertook the support of the family on the early death of his father. He secured employment as a boy-of-all-work at the New England Museum, Boston, where his associations turned him to art and led him to study and practise portrait-painting. He also tried his hand at sculpture, his first attempt in this direction being a bust of Jenny Lind. A life-size bust of Daniel Webster brought him great success and enabled him to leave in 1854 for Florence, where he studied two years. Soon after his return to Boston he began work on the celebrated equestrian statue of Washington, which was unveiled in 1869. It was the first equestrian statue in New England and perhaps the best so far produced. He returned to Florence in 1865 and resided there for several years. His later works include Edwin Forrest as 'Coriolanus' (1867), now in the Actors' Home, Philadelphia; 'Eve Stepping into Life'; 'La Petite Pensée'; 'Saint John the Evangelist.' Of his larger works the most important are his 'Emancipation Group' in Washington (unveiled 1875), a bronze representation of Lincoln freeing a kneeling slave; the Webster statue in Central Park, New York; the statue of Josiah Quincy before the City Hall, Boston; the Washington monument at Methuen, Mass. He published an autobiography, 'My Three-Score Years and Ten' (1891). Consult also Taft, 'History of American Sculpture' (New York 1903).

**BALL, Walter William Rouse,** English mathematician: b. 1850. He received his education at Trinity College, Cambridge, and at University College, London. He became lecturer at Trinity College, Cambridge, in 1878, was appointed director of mathematical studies in 1891 and senior tutor and chairman of the college educational committee. He was the representative of the University of Cambridge on the borough council in 1905. He is a member of the governing bodies of Westminster School and the Cambridge Perse School. He has examined on various occasions in the Tripos and other examinations and has served on numerous boards and syndicates. He is owner of the largest collection in Great Britain of portraits of mathematicians. His publications include 'A History of Mathematics'; 'The Genesis and History of Newton's Principia' (1893); 'The Student's Guide to the Bar' (7th ed., 1904); 'History of Trinity College, Cambridge' (1906); 'History of the First Trinity Boat Club' (1908); 'Short Account of the History of Mathematics' (5th ed., 1912); 'Mathematical Recreations and Essays' (5th ed., 1912); 'Records of Admission to Trinity College, 1546–1900'; and various memoirs in mathematical journals.

**BALL,** as an article of ammunition, see Gunnery; Ordnance; Projectiles; Shot.

In connection with sports and games the ball in various sizes has been in universal usage since ancient times. The Greeks regarded ball-games as of much value in adding grace to the figure and giving elasticity to the muscles of the body and the Romans also played a game of ball in connection with their baths for the same purpose. Several of the games then played resembled modern handball, football and polo. Modern tennis and rackets undoubtedly had their beginnings in the *jeu-de-paume* of the Middle Ages and lacrosse was originally played by the North American Indians, though the historical data concerning these and other games are meagre and new customs and rules have so changed games that their true history cannot be told with exactness. Of varieties of balls for use in the different sports there are many. The baseball is made of a sphere of rubber, 2½ ounces in weight, which is wound with yarn and covered with leather. The basket-ball is an inflated rubber ball, enclosed in leather and from 30 to 32 inches in diameter. The tennis ball is of rubber covered with white flannel, about 2½ inches in diameter and 2 ounces in weight. The lacrosse ball is made of india-rubber and

is 8 or 9 inches in diameter. The polo ball is of wood and 4 or 5 inches in diameter. The football is a prolate spheroid in shape and consists of a rubber bladder encased in a leather cover. Billiard balls are of ivory and from $2\frac{4}{16}$ to $2\frac{7}{16}$ inches in size. See BASEBALL; FOOTBALL; BASKETBALL; LAWN TENNIS; RACKETS; CRICKET; HANDBALL; LACROSSE; POLO; BILLIARDS; ETC.

**BALL BEARINGS.** See BEARINGS, ANTI-FRICTION.

**BALL CLAY.** See CLAY.

**BALL COCK,** a self-acting stop-cock, opened and shut by means of a hollow metallic sphere attached to the end of a lever connected with the cock. Its use is principally to regulate the supply of water to cisterns. The ball floats by reason of its buoyancy and rising and sinking as the water rises and sinks, shuts off the water in the one case and lets it on in the other.

**BALL FLOWER,** an architectural ornament resembling a ball placed in a circular flower, the three petals of which form a cup around it; usually inserted in a hollow moulding and generally characteristic of the Decorated Gothic style of the 14th century.

**BALL NOZZLE.** See HYDRODYNAMICS.

**BALL AND SOCKET,** a joint used in machinery and piping. It consists of a spherical end of a rod or pipe fitting into a hollow sphere of the same size on a like piece. The object of this joint is to provide a close, movable connection and to prevent leakage in pipes. Suspended gas chandeliers are usually fitted with this movement.

**BALLAD,** a short narrative poem in stanzas, originally intended for singing. The name, which is derived from the Latin *ballare,* to dance, is frequently used very loosely and applied to a variety of songs and verse-tales with no real bond of association. But in the stricter sense it belongs to a comparatively small body of anonymous traditional poetry, the production of which has practically ceased in English-speaking countries, though literary imitations of the type are still composed. Its most characteristic quality is impersonality. Not only is the author unknown, but in the pure ballad there is no trace of his individuality. The material of the poem is usually popular in origin and the sentiment and point of view are those, not of a single person, but of the whole people. "People," in the sense here used, has reference not to the lower classes but to society in a period when in the matter of culture the community was homogeneous. Thus the origins of the kind of poetry of which the ballad is a survival are to be looked for in a comparatively primitive stage of society, before the "poetry of art" came into existence, when the tribal community could still express itself in simultaneous utterances accompanying the rhythmic movements of dance or march.

This view of the origin of ballad poetry is not universally accepted. Over against it there is placed the apparently simpler theory that the ballads are the production of minstrels, from the 15th century down, who derived from romances and other sources in artificial literature stories which they threw into crude stanzas, to chant sometimes in the houses of the great, sometimes at fairs and other popular gatherings. But the objections to this view are serious. First, minstrel ballads such as are here described were manufactured and still exist in abundant broadsides and chapbooks, but they are universally lacking in precisely those qualities of impersonality and unconsciousness which constitute at once the mark and the charm of the true popular ballad. Second, the minstrel theory ignores the existence of a large mass of ethnological evidence, showing the indubitable and well-nigh universal existence of the practice of communal song and the development in this song of a narrative element. Third, it is a matter of definite proof that the genuine ballads which have been collected during the last two centuries have come, with rare exceptions, not from the mouths or wallets of minstrels, but from humble unprofessional people, "the spinsters and the knitters in the sun," who have in so many branches of folk-lore proved the best conservators of the heritage of the people. A minstrel's addition to his stock of an occasional piece of more or less degraded popular verse in no wise overthrows the significance of this fact. There is no reason to believe that, in the centuries before ballad-collecting began, the medium of transmission was substantially different.

The argument on the other side has already been partly indicated. First, there exists the evidence of the wide-spread practice of accompanying communal activity — in labor, ceremonial or festal dance — with rhythmic utterances; the gradual growth of these utterances in definiteness of form; the practice of making them the medium of narrating some episode known to all — e.g., the story of some great deed accomplished by the hero whose death is being lamented, or the manner of the victory which is being celebrated, or some ludicrous incident in the season's labor happily finished,— the contribution of a new line or stanza now by this, now by that member of the dancing throug; the recurrent refrain sung by all; the final creation of a narrative song for which no one individual is responsible, but which is the expression of the thought and feeling of all. Second, the unindividual element is intensified by the method of transmission. Before any extant ballad came into the form in which we find it, it had been handed down from mouth to mouth through many generations, modified endlessly in detail, but by this very process losing whatever individual elements might at any stage appear in it, and keeping, with whatever change of matter or modernization of dialect, just those qualities of impersonality and unconsciousness of literary effect which have been noted as its characteristic traits. Third, the theory suggested by these facts receives corroboration from the refrain and from the characteristic narrative method of the ballad, the so-called "incremental repetition." The phrase is used to describe the method of telling a story by the repetition in a set of stanzas of the same words with just enough change to advance the narrative one step. Thus the mo-

tive for the murder of the Bonnie Earl of Murray is gradually insinuated by this method in these stanzas:

He was a braw gallant,
And he rid at the ring;
And the bonny Earl of Murray,
Oh he might have been a king!

He was a braw gallant,
And he played at the ba;
And the bonny Earl of Murray
Was the flower amang them a'.

He was a braw gallant,
And he played at the glove;
And the bonny Earl of Murray,
Oh he was the Queen's love!

A moment's reflection will show how suitable such a device is to communal improvisation and how naturally it is derived from it. As for the refrain, the part played by the crowd in the singing of it does not need to be argued.

It is not implied that all ballads showing incremental repetition and preserving refrains were thus composed by a throng. For most, perhaps for all, of our extant ballads it is probably safe to assume a single original author, whose name and circumstances are now hopelessly lost, but who first gave each ballad a definite form. But even when making this assumption, we must bear in mind the fact that he worked after models which went back ultimately to communal products, that he worked in a period when it was still possible to compose in the communal spirit, that he used for the most part popular material and, finally, that his product has been transmitted orally through generations who altered and modified till whatever of personal existed in the first form has been obliterated. Thus, if the famous phrase, "das Volk dichtet," cannot be used of the ballads we read to-day in the sense in which it was true of the earliest communal chants, it still holds to this extent that, in so far as a given specimen approaches the pure ballad type, it fails to exhibit the marks of any handiwork but that of the folk.

The ballad thus stands at the remote end of that line of development at the hither end of which we find the modern subjective lyric such as the sonnet. The curve which lies between shows the tendency running through the history of poetry to have been to emphasize more and more the individuality of the author, to relegate the people more and more to the place of mere audience. We are prepared to find, then, many features in the history of ballads highly dissimilar and even contradictory to those of modern literature. Thus the life of a modern poem begins when it is committed to paper: a ballad then begins to die. It lives only while it is still being transmitted orally from generation to generation, receiving from each its stamp. A modern poem has one authentic text: a ballad may have many texts, varying in number with the extent of territory over which it was sung, but no single authoritative text. A modern poem avoids explicit borrowing: the ballad absorbs and assimilates freely numbers of "commonplaces,"—phrases, lines and even sets of stanzas that appear with equal appropriateness in half a dozen different ballads and are the exclusive property of none. Such are the formulas for sending a messenger,

O whaur will I get a bonny boy, etc.;

for ordering a horse,

O saddle me the black, the black,
O saddle me the brown;

for describing a journey,

They hadna' gaen a mile, a mile,
A mile but barely three;

for concluding a romantic tragedy,

The tane was burried in Mary's kirk
The tither in Mary's quire,
And out of the ane there grew a birk,
And out of the ither a brier, etc.

A modern poet seeks novelty of epithet: the ballad clings to the traditional description; the gold is red, the lady is fair, her dress is grass-green, her hair is yellow, her tears are salt, the moon's light is clear, the porter is proud, brothers are bold, a bower is "bigly," and so on.

Equally characteristic is the treatment of incident and plot in the ballad. There is seldom any introduction: we plunge at once into the midst of the action. The stanzas leap from peak to peak of the narrative, with no attempt to supply the less important links, yet seldom with any real sacrifice of clearness. The events in the uncontaminated ballad are unmoralized and unsentimentalized; the bald fact is left without comment or criticism from the singer. Conscious figures of speech are rare and the background is seldom filled in. Thus the general result is that of rapidity of motion, directness and unconsciousness of effect, an absence of artistic suggestion. Whenever we find a moral drawn or a dwelling on the pathetic, interpolation by a modern would-be artist is to be suspected.

From what has been said of origins, it is clear that little can be guessed as to the date of composition of ballads. Some, notably those simple, highly typical stories like 'The Twa Sisters,' written in a two-line stanza with a refrain, with stress upon situation rather than upon succession of events, may in some form be of almost any age. Others have an upper limit of date fixed by the historical event which occasionally forms the basis of the plot. The dates of ballad manuscripts, which are, of course, an entirely different thing, and a date of death rather than of birth, are more easily fixed. The earliest is 'Judas' (No. 23 in Child's collection) from a 13th century MS.; the next 'Riddles Wisely Expounded' (Child, 1) about 1445; a little later, 'Robin Hood and the Monk' (Child, 119), 'St. Stephen and Herod' (Child, 22), and 'Robyn and Gandelyn' (Child, 115); two exist in copies of about 1500; two others about 1550. Less than a dozen are preserved in MSS. before 1600. The most important single MS. is the Folio which Bishop Percy used as a basis for his famous "Reliques of Ancient English Poetry," and it is in a handwriting of about 1650. A few appear in early printed forms. 'A Lytell Geste of Robyn Hode' was printed about 1500, and broadside versions, usually in very degraded form, appeared frequently in the 17th and 18th centuries. The most important sources after the Percy Folio are the collections made directly from the mouths of the people, such as those of David Herd (1776), Mrs. Brown of Falkland (1783–1801), Sir Walter Scott (1783–1830), C. K. Sharpe (*c.* 1823), Motherwell

(1825–27), Kinloch (1826), Buchan (1828), MacMath and Child (second half of the 19th century).

Ballads on historical occurrences apart, most of the plots belong to the mass of folk-tale which is the exclusive possession of no one nation or language. Many ballads tell stories, versions of which are found in almost every known tongue. The explanation of this world-wide diffusion of story-material is one of the standing problems of folk-lore; but whatever theory of its cause be adopted, the fact that it is largely from this international treasury that the ballads derive their plots is a strong reason for regarding them as essentially «popular» in matter as well as in manner.

Turning now to the nature of these stories, we find that by far the largest class is concerned with romantic love and its consequences. Many are tragic, the interference of fathers, mothers or brothers being perhaps the commonest cause of the fatal issue. Both in these and in the romantic ballads with happy endings the sympathy of the audience with the lovers is in general assumed, and in cases of illicit love no moral judgment is passed or suggested. Some of the best are ballads of war by land or sea; and the irregular warfare of the Borderland between England and Scotland has given birth to a number justly famous. The largest group connected with a single personality is that of the Robin Hood ballads. Of these, some like 'A Lytell Geste' and 'Robin Hood and the Monk' represent not only the finest of the outlaw group, but rank with the best of all ballads. The later members of this group, however, show serious deterioration, and they finally sink into the degradation of broadsides manufactured by printers' hacks. The 'Geste' itself is of especial interest as showing a significant stage in the process by which ballads are combined in the formation of the popular epic. In it four or more distinguishable ballad plots are woven together to form a miniature epic, the interweaving being clearly the work of a conscious artist who at the same time was in full sympathy with the popular spirit. The supernatural also plays an important part in the ballads, and it is possible to gather from them much information as to popular belief on such themes as fairies, witches, the return of the dead, transformation by enchantment and the like.

The number of extant ballads in English may be gathered from the great final collection of Professor Child. Here, ignoring variants, we have 305, most of which are popular in the sense which has been defined, i.e., they fulfil these conditions, that even if written each by an individual author, that author belonged to the people, drew his material from the common stock of folk-tales, wrote in the popular spirit, and used the traditional method, had his product accepted by the folk and passed on and modified by them through centuries of oral transmission. Some few such as 'The Boy and the Mantle,' 'King Arthur and King Cornwall,' and 'The Marriage of Sir Gawain,' are closely associated with metrical romances, and are usually regarded as written by minstrels for more courtly audiences, but are yet enough in the popular style to justify their inclusion as ballads. More are traditional ballads corrupted for the printing press and represented by broadside versions because no purer form has survived. And in the case of almost every ballad surviving in several versions, some versions show a higher degree of purity from literary editing than others.

The localities from which the ballads have been gathered are widely scattered, versions of several having been picked up in America. But Scotland claims about two-thirds of the whole.

Spain possesses the richest ballad literature of all Latin peoples. The Serbians still maintain in popular use ballads of a primitive kind, which have long since disappeared in other Occidental nations more under the influence of modern civilization. In Germany the oldest extant ballad, the 'Hildbrandslied' dates from the 8th century. Ballad literature flourished there, reaching its highest point about the year 1300 and lasting until the 16th century, when a rapid decline set in. It was revived during the 19th century and aroused great literary interest.

**Bibliography.**— The completion of F. J. Child's exhaustive 'English and Scottish Popular Ballads' (5 vols., Boston 1882–98), with its bibliographies and full account of the sources, makes unnecessary a list of previous less comprehensive collections. Every known version of every extant ballad in any English dialect was intended to be included by the editor, and little or nothing has escaped him. The introductions give an account of parallels and analogues throughout the world. An abridged collection has been edited by H. C. Sargent and G. L. Kittredge (1 vol., Boston 1904). On the question of origins, consult F. B. Gummere, 'Old English Ballads' (Boston 1894); 'The Popular Ballad' (New York 1907); 'Democracy and Poetry' (ib. 1911); 'The Beginnings of Poetry' (ib. 1904); 'The Popular Ballad' (Boston 1907); T. F. Henderson's edition of Scott's 'Minstrelsy of the Scottish Border' (Edinburgh 1902) and his 'Scottish Vernacular Literature' (Chap. xi, London 1898) and Courthope's 'History of English Poetry' (Vol. I). An excellent condensed statement of the whole matter by G. L. Kittredge forms the introduction to the one-volume edition of Child's collection. American ballads were collected by J. A. Lomax in the volume 'Cowboy Songs' (New York 1911). Of Spanish ballads the best collections are Marin, 'Cantos populares españoles' (5 vols., Madrid 1883); 'Biblioteca de las tradiciones populares' (11 vols., Seville 1883). Consult also Böhl von Faber, 'Floresta de rimas antiguas Castellanas' (3 vols., Hamburg 1825); Balaguer, 'Historia de los Trovadores' (Madrid 1888); Lockhart, 'Ancient Spanish Ballads' (London 1823); Fitzmaurice Kelly, 'History of Spanish Literature' (New York 1898). For the Serbian consult Bowring, 'Serbian Popular Poetry' (London 1827); Kapper, 'Volkslieder der Serben' (Leipzig 1853); Krauss, 'Sagen und Märchen der Südslaven' (Leipzig 1884). For the German consult Uhland, 'Alte hoch und niederdeutsche Volkslieder' (4 vols., 3d ed., Leipzig 1892); Robertson, 'History of German Literature' (Edinburgh 1902); Scherer, 'Die schönsten deutschen Volkslieder' (Leipzig 1868); Vogt and Koch, 'Geschichte der deutscher Litteratur' (2 vols., ib. 1904).

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**BALLAD.** In music, this term has been used at different periods to designate various musical forms. At first ballads were principally literary compositions recited by minstrels with improvised accompaniment on some instrument, usually the harp. This is especially the case with the old ballads of Scotland, England, Spain and Scandinavia. In Italy preceding the growth of instrumental music the ballad appears to have been a dance song, and the same is true of the ballads of France and Germany which reached a high degree of artistic elegance in the 13th century. In the 15th century the ballad divided honors with the rondeau as the popular form of song with musical accompaniment. The decline of the ballad set in about the close of the 16th century, its form becoming more and more simple, and returning to the plain strophic folk song, and even degenerating into the cheap, trivial song sung in the streets. The modern ballad is not a revival of the older form. It is now the title of purely instrumental works for piano or orchestra. The ballads of Bürger, Goethe and Schiller were first set to music by Zumsteeg, but the setting was inadequate. Lowe secured a better characteristic expression for each stanza and welded his compositions into an artistic whole by employing a few pregnant motifs. Brahms, Schubert and Schumann followed in his footsteps and have left unsurpassed examples of the modern vocal ballad. Senta's ballad from 'The Flying Dutchman' is a good example of the modern vocal form, while Chopin's exquisite ballads are unequalled examples of the modern purely instrumental form, in which the theme is the same as in the vocal ballad, but of which the fundamental mood is decidedly sensuous. Consult Riemann, H., 'Handbuch der Musikgeschichte' (Leipzig 1906).

**BALLAD OPERA,** a form of operetta which had a great vogue in England in the 18th century, and in which the usual method of writing music to the words was reversed. Well-known popular airs were pieced together and new words were written to the music. Spoken dialogue was interspersed. The most popular work of this genre was 'The Beggar's Opera' of John Gay, produced in London in 1727. The year 1728 saw the production of six works of similar nature by different authors. 'The Beggar's Opera' was produced in New York in 1750, and from then until about 1820 works of its kind were the only kind of opera offered in America. Consult Sarrazin, G., 'John Gay's Singspiele' (Weimar 1898).

**BALLADE,** bą-läd', the earlier and modern French spelling of "ballad," but now limited in its use to a distinct verse-form introduced into English literature of late years from the French and chiefly used by writers of *vers de société*. It consists of three stanzas of eight lines each, with an "envoy" or closing stanza of four lines. The rhymes, which are not more than three, follow each other in the stanzas, thus: a, b, a, b; b, c, b, c and in the envoy, b, c, b, c; and the same line serves as a refrain to each of the stanzas and to the envoy. There are other varieties, but this may be regarded as the strictest, according to the precedent of Villon and Marot.

**BALLAGI, Maurice,** or **Moritz, Bloch,** a Hungarian philologist and Protestant theological author, most widely known for his grammars and dictionaries of the Hungarian language: b. Inocz, of Jewish parents, 18 March 1815; d. 1 Sept. 1891. He was educated at Budapest and Paris; was converted to Protestantism in 1843; studied theology at Tübingen; and was professor of theology at Szarvas from 1844 to 1848 and from 1851 to 1855, and at Budapest from 1855 to 1878. His first large work was the translation of the Bible into the Hungarian language for the purpose of Magyarizing the Jews, but of this work only the Pentateuch and the book of Joshua were published (Budapest 1840–43). The most important of his philological works are 'Ausführliche theoretischpraktische Grammatik der ungarischen Sprache' (1843; 8th ed., 1881); 'Vollständiges Wörterbuch der ungarischen und deutschen Sprache' (2 vols., 1854–57; 6th ed., 1890); 'Sammlung der magyarischen Sprichwörter' (2 vols., 1850; 2d ed., 1855).

**BALLANCHE,** bą-länsh', **Pierre Simon,** French philosopher: b. Lyons, 4 Aug. 1776; d. 12 June 1847. His great work is the 'Palingénésie sociale' (1828), in which he seeks to illustrate the workings of God in history and sketch how human society may and will be reconstructed so as to attain its highest development. His works are a strange mixture of mysticism, socialism and the philosophy of history. His 'La vision d'Hêbal' (1832) is a prophetic forecast of the world's history, Hêbal being a second-sighted chief of Scottish clan. He also wrote 'Le vieillard et le jeune homme' (1819); and other works.

**BALLANTINE, James,** Scottish artist and poet: b. Edinburgh, 11 June 1808; d. 18 Dec. 1877. He was brought up as a house painter, but afterward learned drawing under Sir William Allen and was one of the first to revive the art of glass-painting. He was commissioned to execute the stained-glass windows for the House of Lords, and in 1845 published a treatise on glass-staining, which was translated into German. Two prose volumes, 'The Gaberlunzie's Wallet' (1843), and 'The Miller of Deanhaugh' (1845), contain some of his best-known songs and ballads in the vernacular. He was author of 'Poems' (1856 and 1865); 'One Hundred Songs with Music' (1865); 'Life of David Roberts, R.A.' (1866) and 'Lilias Lee' (1871).

**BALLANTINE, William Gay,** American educator: b. Washington, D. C., 7 Dec. 1848. He was graduated from Marietta College 1868, and at the Union Theological Seminary 1872; studied in Leipzig; was attached to the American Palestine Exploring Expedition of 1873; professor of chemistry and natural science in Ripon College 1874–76; assistant professor of Greek in the University of Indiana 1876–78; professor, Greek and Hebrew, Oberlin Theological Seminary 1878–81; president of Oberlin College 1891–96; and since 1897 professor of the Bible in International Y. M. C. A. College, Springfield, Mass. Author of 'Inductive Logic.'

**BALLANTYNE, Charles Colquhoun,** Canadian manufacturer and statesman: b. Colquhoun, Ont., 9 Aug. 1857. He was educated at Colquhoun and Montreal. He became while still a young man managing director of

the Sherwin-Williams Paint Company, Montreal, and was one of its purchasers in 1911. He was some time mayor of Westmount. Although never actively identified with party politics, he has always been regarded as a Liberal, but declared his opposition to the Taft-Fielding reciprocity agreement of 1911. During the European War he raised a battalion for overseas service. On 3 Oct. 1917 he joined the Union government of Sir Robert Borden as Minister of Public Works, but a week later took over the portfolio of marine and fisheries.

**BALLANTYNE, James,** Scottish printer: b. Kelso 1772; d. Edinburgh 1833. Successively a solicitor and a printer in his native town, at the suggestion of Sir Walter Scott he removed to Edinburgh, where the high perfection to which he had brought the art of printing, and his connection with Scott, whose works he printed, secured him a large trade. The firm of James Ballantyne & Company, included Scott, James Ballantyne and his brother John (who died in 1821). For many years he conducted the Edinburgh *Weekly Journal.* His firm was involved in the bankruptcy of Constable & Company, by which Scott's fortunes were wrecked, but Ballantyne was continued by the creditors' trustee in the literary management of the printing-house. He survived Scott only about four months.

**BALLANTYNE, James Robert,** Scottish Orientalist: b. Kelso, Scotland, 1813; d. 1864. After receiving an education at Haileybury College he was sent to India, where he was placed in charge of the Sanskrit College at Benares. His aim, steadily pursued during his residence in India, was to aid in establishing more intelligent relations between Indian and European thought. On his return to England he was made librarian of the East India office. Among his writings are 'The Practical Oriental Interpreter' (1843); 'Catechism of Sanskrit Grammar'; 'Synopsis of Science in Sanskrit and English, reconciled with the Truths to be found in the Nyâya Philosophy' (1856); 'Christianity Contrasted with Hindu Philosophy' (1859).

**BAL'LARAT',** or **BALLAARAT,** Australia, town in the colony of Victoria, the chief centre of the gold-mining industry of the colony, and the place next in importance to Melbourne, from which it is distant west-northwest 74 miles by rail. It owes its present importance and prosperity to its being the centre of one of the richest gold-yielding districts of the world. It consists of two distinct municipalities, Ballarat West and Ballarat East, which are separated by Yarrowee Creek. The town is well lighted with gas, abundantly supplied with water and contains many handsome public edifices, among which may be mentioned the city hall, council chamber, two town halls, a spacious hospital, an orphan asylum, a benevolent asylum, two cathedrals, botanical gardens and an excellent school of mines. Its chief industries are those of the gold mines, iron foundries, woolen and flour mills, breweries and distilleries. Its establishment and rise date from the discovery of gold in 1851. The largest gold nuggets ever unearthed were discovered here. Ballarat East and Ballarat West have been distinct municipalities since 1855, and in 1870 the latter was proclaimed a city. Pop. (1911) 42,403.

**BALLAST.** (1) Heavy matter, as stone, sand, iron or water placed in the bottom of a ship or other vessel, to sink it in the water to such a depth as to enable it to carry sufficient sail without oversetting. (2) The sand placed in bags in the car of a balloon to steady it and to enable the aeronaut to lighten the balloon by throwing part of it out. (3) The material used to fill up the space between the rails on a railway in order to make it firm and solid.

**BALLENTYNE,** or **BALLENDEN, John,** Scottish poet and translator of Boece's 'Latin History,' and of the first five books of Livy into the vernacular language of his time: b. Lothian toward the close of the 15th century; said to have died at Rome 1550. He was in the service of James V from the King's earliest years, and at his request he translated Boece's 'History,' which had been published at Paris in 1526, the translation being printed in 1536. It is so much a free translation as to be almost an original work. As a reward he was made archdeacon of Moray and a canon of Ross. He was a bitter opponent of the Reformation.

**BALLENY,** bălĭā'nę, **ISLANDS,** a group of five small volcanic islands discovered by Balleny in the Antarctic Ocean in 1839, nearly on the Antarctic Circle. One of the islands, Young Island, contains a very lofty mountain, about 12,000 feet high. ,

**BALLESTEROS,** bäl-yĕs-tā'rōs, **Don Francisco,** Spanish general: b. Saragossa 1770; d. Paris, 22 June 1832. He first served in Catalonia against the French during the campaigns of 1792 and 1795, and was appointed to a captaincy. Discharged in 1804 on account of embezzlement, he was nevertheless entrusted by the all-powerful Godoy, "prince of the peace," with one of the most productive offices in the custom-house, the direction of the *resguardo* at Oviedo. When the French army invaded Spain in 1808 Ballesteros was promoted to a colonelcy by the provincial junta of Asturias and joined the Castilian army under Castaños and Black. The regency of Cadiz promoted him to the rank of lieutenant-general and put him in command of the army of Andalusia. He had then to fight against some of the most skilful chiefs of the French army, and succeeded in avoiding their pursuit by peculiar tactics. When Wellington in 1812 took over the general command of all the armies in the Peninsula, Ballesteros showed such violent opposition that he was arrested for treason and sent as a prisoner to Ceuta. A few months later he was restored to liberty but was not allowed to re-enter the military service. On the return of Ferdinand VII to Spain Ballesteros evinced such devotion to monarchical principles that he was appointed Secretary of War, but was soon dismissed and sent to Valladolid, where he was placed under the strictest surveillance. When the struggle between the royalists and the constitutionalists commenced he managed so artfully that each party thought Ballesteros was acting in concert with it. Commissioned by the chiefs of the latter to obtain the assent of the King to the Constitution, he succeeded beyond their anticipations

and became a member of the council of state, while he was at the same time admitted in the *communeros* association. This double-dealing seemed to be perfectly successful, for in 1823, on the entry of the French into Spain, he was appointed to the command of the army; but instead of showing fight he concluded a capitulation with the Duke of Angoulême, which became the occasion of accusations of such a character that Ballesteros thought it imprudent to stay any longer in his own country and took refuge in France, where he died a forgotten exile.

**BALLESTREM,** băl'lĕs-strām, **Franz Xaver, Count von,** German statesman: b. Plawniowitz, in upper Silesia, 1834; d. 1910. Entering the Prussian army he served during the Austro-Prussian War of 1866 and the Franco-Prussian War of 1870–71. At the close of the latter he was elected to the Reichstag, where he soon became prominent in the Centre party. Pius IX appointed him a papal chamberlain for his activity in the Kulturkampf and he was first vice-president of the lower House, 1890–93.

**BALLET,** băl'lā', or băl'lĕt (from *bal;* from the French *baller,* and the Italian *ballare,* to dance), a kind of dance now usually constituting an interlude in a theatrical performance. In its widest sense a ballet is the representation of a series of passionate actions and feelings by means of gestures and dancing. In a more confined sense we call ballets musical pieces, the object of which is to represent, by mimic movements and dances, actions, characters, sentiments, passions and feelings, in which several dancers perform together. According to the analogy of lyrical poetry those which rather represent feelings may be called lyrical ballets; those which imitate actions, dramatic ballets. The lyrical and dramatic ballets, together, constitute the higher art of dancing, in opposition to the lower, the aim of which is only social pleasure. Dramatic ballets are classed as historical, the subject of which is a real event; mythological, in which the subject is some fabulous action; and poetical, founded on poetical fiction, to which belong also the allegorical, necessarily the most imperfect. A ballet is usually divided into several acts, each of which has several entrées. An entrée, in a ballet, consists of one or several quadrilles of dancers, who, by their steps, gestures and attitudes, represent a certain part of the action. In criticising a ballet we must consider, first, the choice of the subject, which must have unity of action or of passion, and be capable of being represented in an intelligible manner by means of mimic movements and dancing; secondly, the plan and execution of the single parts, which must have due proportion to each other; and, finally, the music and decorations, which must supply whatever dancing cannot bring before the eye. The ballet is an invention of modern times. Baltazarini, director of music to Catherine de Medici, probably gave its form to the regular ballet, though pantomimic dances were not unknown to the ancients. The ballet owes much to the French, and particularly to Noverre. During the early 19th century the French and Italian schools were in their heyday but since 1850 have been eclipsed by the Russians who under Petipas, Fokine, and more recently Bakst, have evolved a school uniting the romanticism of the old-time ballet fairy lore with a genuinely modern realism. Anna Pavlowa was developed in this school and is regarded the equal of Taglioni, Cerito and Ellsler, the greatest danseuses of the French and Italian schools of the first half of the last century. Consult Castil-Blaze, 'La danse et les ballets' (Paris 1832); Flitch, 'Modern Dancers and Dancing' (London 1912); Menestrier, 'Des ballets anciens et modernes' (Paris 1682); Noverre, "Lettres sur la danse et les ballets' (1760; 1807); Pougin, A., 'Dictionnaire historique du théâtre' (Paris 1885); Voss, 'Der Tanz und seine Geschichte' (Berlin 1868). See OPERA.

**BALLIET,** băl'li-et, **Thomas M.,** American educator: b. 1 March 1852. He was educated at Franklin and Marshall College (Lancaster, Pa.) and at Yale University; was appointed superintendent of public schools in Springfield, Mass., and also became associate editor of the *Pedagogical Seminary.* He was elected dean of the School of Pedagogy of New York University, which post he holds at present. His published writings include 'Some New Phases of Educational Thought.'

**BALLIN, Albert,** director-general of the Hamburg-Amerika line: b. Hamburg 1857, of Jewish parents. After receiving a good commercial education he went to England and resided there several years, studying the British mercantile marine and acquiring a thorough knowledge of the language. Since 1886 he has been the head of the great Hamburg-Amerika steamship line, and it was mainly due to his perseverance and organizing skill that his company succeeded in surpassing all its rivals in the variety and extent of its maritime operations. When he joined the firm, its capital was $3,750,000; at the outbreak of the European War it was $37,500,000. Whereas in the early years of his administration its gross profits were $625,000, in 1913 its gross profits approached $15,000,000, while the company's pennant floated from the mastheads of 180 vessels. From a total tonnage of 60,000 for the whole fleet 25 years before, one single vessel in 1913, the *Imperator,* had alone a tonnage of 50,000. Though of humble origin Herr Ballin is one of the intimates of the Kaiser, who admires his extraordinary talents and has frequently sought his counsel when matters relating to the extension of German commercial affairs were in question. He has often been called one of the real makers of modern Germany, and so highly prized are the services he has rendered to his country that the Kaiser is stated to have offered him on more than one occasion a portfolio in his cabinet. A modest and retiring man of small stature and unobtrusive bearing. Herr Ballin is essentially a man of peace; he has never been included in the "jingo" ranks of his countrymen. He is credited with having exerted all his influence with the Kaiser to yield to the United States demands on the submarine question in order to avoid a rupture with this country. He foresaw and dreaded that which eventually came to pass — the seizure of all the valuable German vessels interned in American ports. In December 1915 he published an article in the *Vossische Zeitung* in which he repeated the

German slogan that the war was all for the advantage of the world on the other side of the ocean (the United States), and to "the delight of the yellow race" (Japan). His assertion that Germany was fighting for a free pathway over both land and water was less convincing, from the fact that the actual freedom of the seas existing before the war had enabled him unmolested to build up a gigantic shipping concern.

**BALLIN, Hugo,** American artist: b. New York, 7 March 1879. He studied at the Art Students' League, New York, and in Rome and Florence. While in Italy he studied mural decoration with Robert Blum. He returned to the United States and established his practice in New York. His work shows a notable ability in the field of decorative painting. His principal works are 'Susanna's Bath'; 'The Lute Player'; 'Three Women Dancing about Cupid,' which won the Shaw prize in 1905. He won the Clarke prize in 1906 with 'Mother and Child.' Another notable work is his 'Portative Organ.' He was awarded the Hallgarten prize and the Isidor gold medal in 1907. His work has been reproduced in the *Critic,* the *Century* and the *Kunst und Kunstlerwerke* of Vienna. His works are to be found in the executive chamber of the Capitol at Madison, Wis., in the home of Oliver Gould Jennings, New York, and E. D. Brandyce of Boston. He is also represented in the National Museum, Washington, D. C., the Montclair Museum, N. J., and the Ann Mary Memorial, Rhode Island, and in many private collections. He is an associate of the National Academy since 1905, is member of the Architectural League, the Society of Mural Decorators, the National Institute of Arts and Letters and the American Water Color Society.

**BALLINGER, Richard Achilles,** American lawyer and public official: b. Boonesboro, Iowa, 9 July 1858. He was educated at the University of Kansas and Washburn College, Topeka, and was graduated at Williams College in 1884. He was admitted to the bar in 1886, practised in, and was city attorney of, Kankakee, Ill., and New Decatur, Ala.; and at Port Townsend, Wash., 1889–97. He was United States court commissioner 1890–92, judge of the Superior Court, Jefferson County, Wash., 1894–97. In the latter year he began the practice of law in Seattle and from 1904 to 1906 was mayor of that city. During the next two years he was commissioner of the General Land Office in Washington, and from 1909 to 1911 was Secretary of the Interior in President Taft's Cabinet. His opposition to a radical conservation policy led to a bitter conflict with Gifford Pinchot, the chief forester, and a Congressional inquiry was instituted into his administration of Alaskan coal lands, in which he was completely exonerated. After his resignation as Secretary of the Interior he resumed the practice of law in Seattle. He has published 'Ballinger on Community Property' (1895); and 'Ballinger's Annotated Codes and Statutes of Washington' (1897).

**BALLINGER,** Tex., city and county-seat of Runnels County, 225 miles west of Fort Worth, on the Colorado River, and on the Abilene and Southern, the Gulf, Colorado and Santa Fé railroads. It is situated in a rich agricultural region, producing corn, cotton, fruit, peanuts, wheat, etc., and has flour and cotton-seed-oil mills. The city contains a Carnegie library, two theatres, several parks and a lake. The water works are municipally owned. An irrigation system has been constructed recently on the Colorado River at this point. Pop. 3,536.

**BALLIOL** (bāl'yol) **COLLEGE,** Oxford, an important college founded between 1263 and 1268 by John Balliol. The original foundation consisted of 16 poor scholars, and the revenue for their maintenance amounted for many years to only 8d. per week for each. From 1340 to 1830 the college was greatly enriched by various benefactions. The Society consists of a master, 13 fellows and 24 scholars. The master and fellows enjoy the privilege of electing their own visitor. In 1887 Balliol College absorbed New Inn Hall. John Wyclif was master of this college in 1361; among its scholars have been John Evelyn, Bradley the astronomer, Matthew Arnold, Swinburne, Archbishops Tait and Temple, H. H. Asquith and Lord Edward Grey. The Snell exhibitions for students of Glasgow University attract annually to this college a few distinguished Scottish students.

**BALLISTIC GALVANOMETER,** a galvanometer (q.v.) designed or used for the measurement of electric currents of very short duration. It does not necessarily differ in any essential particular from other galvanometers, except that the natural period of oscillation of its needle must be long in comparison with the duration of the transient currents that are to be measured. If $C$ is the intensity of the current that is to be measured, and $t$ is the time during which it passes, the general theory of the instrument is as follows: The magnetic moment tending to deflect the needle is proportional to $C$, and the angular velocity that such a magnetic moment can produce when acting upon a freely suspended body like the needle is proportional to $t$. Hence the angular velocity actually communicated to the needle is proportional both to $C$ and to $t$; or, in other words, it is proportional to the product of $Ct$. But an electric "current" (such as is here denoted by $C$) is defined as the quantity of electricity passing per second; and hence $Ct$ is the quantity of electricity passing in the time $t$. The angular velocity actually communicated to the needle (which is inferred by observing the extent of the swing) is therefore proportional to the total quantity of electricity passed through the galvanometer during the short time $t$, and not to the intensity of the current. This constitutes the chief peculiarity of the instrument. The ballistic galvanometer measures the total quantity of electricity passed through the instrument, and its readings are in coulombs; while other galvanometers measure the intensity of the current passing, and their readings are in amperes. If the needle of the instrument moves sensibly during the passage of the current, the magnetic movement exerted upon the needle will also vary, even though the current itself remains constant. It is for this reason that the period of free swing of the needle must be long if the instrument is to be used ballistically.

**BALLISTIC PENDULUM.** This device, first used in 1740, measures the velocity of projectiles and the resistance of the air. If such a pendulum, being at rest, is struck by a body of known weight, and the vibration, which it makes after the blow, is known, the velocity of the striking body may thence be determined. The quantity of motion of the body before impact is equal to that of the pendulum and body after impact. It consists essentially of a strong, large pendulum, which has its axis of suspension secured, and a core or block at its lower part. The projectile is fixed into this core and remains there, causing the pendulum at the same time to swing through a certain angle ($a$) with the vertical; this is measured by a slider which is pushed along a fixed arc. It is an established fact that the centres of percussion and oscillation are coincident, and the centre of oscillation is readily found by causing the pendulum to vibrate through a small arc; and observing the period ($T$) taken to perform a number of vibrations ($n$), then $\frac{T}{n}$ gives the time ($t$) of a single vibration with considerable accuracy. The length of the corresponding simple pendulum ($l$), the distance of the centre of oscillation or percussion from the axis of suspension is then known from the formula, $t = \pi\sqrt{\frac{l}{g}}$. If the distance of the centre of the core from the axis of suspension is exactly equal to $l$, the instrument is in adjustment; but if this is not the case, weights must be pushed up or down the pendulum by trial and error, till the time of oscillation is found to be correct.

**BALLISTICS.** The name "ballistics" applies to that division of mechanics which treats of the motion of projectiles.

This subject has engaged the attention of mathematicians and scientists for centuries, and approximate determinations of physical relations have been assumed as fundamental laws, and elaborate tables calculated on various hypotheses. A résumé of these contributions to the science will be found under the caption GUNNERY, to which the reader is referred.

As a basis for the simple general discussion of both exterior and interior ballistics, certain general hypotheses, justified by present knowledge derived from careful experiments in each case, will be made. These are:

1. The motion of a projectile in the bore of a gun is such that the velocity, $v$, when the projectile has traveled a distance $u$ along the bore is given by the relation

$$v = \frac{au}{b+u}$$

This relation is derived from the records of measurements of time of recoil of a free carriage, measured by a tuning fork scoring on a blackened ribbon. In all cases the velocity is duplicated by a relation of this form with a fidelity as remarkable as will be found in the case of any accepted experimental law connected with explosives.

2. The motion of a projectile in air is, at any point $x,y$, of its path or trajectory affected by two forces; namely, the force of gravity acting vertically downward with an acceleration $g$ feet per second, and the resistance of the air, acting in direct opposition to the motion of the projectile in its path. Experiment shows that the retardation due to air resistance is given by an expression of the form

$$r = \frac{F(v)}{C}$$

in which

$F(v)$ is dependent on the velocity, $v$, alone, and increases with it; and $C$ is given by the formula

$$C = \frac{\delta_1}{\delta} \cdot \frac{w}{id^2}$$

in which

$\delta_1$ is the density of an atmosphere assumed as standard,

$\delta$ is the mean density of the air in the particular case under consideration,

$w$ the weight of the projectile in pounds,

$d$ the calibre of the projectile in inches; that is, the diameter of the projectile,

$i$ the "coefficient of form" of the projectile,

$C$ the "ballistic coefficient" of the projectile.

The value of $i$ is given by the formula

$$i = \frac{2}{n}\sqrt{\frac{4n-1}{7}}$$

$n$ being the radius of the arc with which the ogive or head surface is generated, the radius being measured in calibres. $i$ is unity for $n=2$, which is the standard for ballistic tables. Recent developments point to a value $n=7$ for projectiles of the future; this gives $i=0.56$, thus practically halving the retardation, or doubling the ballistic efficiency of a projectile otherwise the same.

With these hypotheses, exterior and interior ballistics may be satisfactorily discussed and practical problems may be readily solved.

**Interior Ballistics.**— If $v$ be the velocity, in feet per second, corresponding to a travel, $u$ inches, along the bore, of a projectile of mass $m$ and weight, $w$ pounds; propelled by a charge, $\omega$ pounds of powder, fired in a powder chamber of volume, $c'$ cubic inches; the cross section of the bore being $\sigma$ square inches; the total length of the rifled bore being $U$, and the total volume of the bore and chamber combined being $C$, the following relations obtain

$$\sigma U = C - c'$$

$$\sigma P = 12\, m v \frac{dv}{du}$$

$$= 12\, \frac{w}{g} \cdot \frac{a^2 bu}{(b+u)^3}$$

$P$ being the pressure in pounds per square inch for travel $u$.

The maximum pressure occurs when

$$u = \frac{b}{2} = \bar{u}$$

for which

$$\sigma \bar{P} = \frac{16}{9} \cdot \frac{ma^2}{b}$$

For infinite travel

$$v = a$$

and hence

$$E_\infty \omega = \frac{1}{2}\, ma^2$$

represents the total energy of the powder charge pertaining to the translation of the projectile; and, as the powder charge is increased, the waste energy (that is, that used in doing work other than conferring velocity on the projectile) remaining approximately the same, while the total energy increases, it is seen that the efficiency per pound of powder should increase with the charge, other conditions remaining the same. Accordingly it would appear that

$$\frac{1}{2}\, m \frac{a^2}{\bar{\omega}} = E$$

should increase with the powder charge; or, more strictly, with the powder charge per unit of chamber-volume. In metric units this ratio of powder charge to chamber is expressed by dividing the weight of the powder charge by the volume of the chamber; but, as our units are not so related, this ratio, called the "density of loading" is defined as the ratio of the weight of the powder charge to a volume of water which will exactly fill the powder chamber; and, as one pound of water occupies 27.68 cubic inches, the density of loading is

$$\Delta = \frac{27.68\bar{\omega}}{c'}$$

Accordingly,

$$E = \frac{1}{2} \cdot \frac{w}{g} \cdot \frac{a^2}{\bar{\omega}} = E_0\, \Delta^q$$

$E_0$, being the value of $E$ for a density of loading unity, serves as a measure of the quality of the powder as to force or potential, $q$ being a small fraction.

It is readily seen that the space in the powder chamber, $c'$, unoccupied by the powder substance and known as the "initial air space," is

$$c'\left(1 - \frac{\Delta}{\delta}\right)$$

in which $\delta$ is the density of the powder substance, or its "specific gravity," as it is otherwise called. The value of $\delta$ for all powders is about 1.6, being given for smokeless (nitrocellulose) powders, as

$$\delta = 1.644 - .012h$$

by Colonel Kisnemsky, $h$ being the content of moisture, expressed as a percentage.

When the projectile has advanced along the bore a distance $u_0$, the volume of travel, $\sigma u_0$, corresponding to which is the initial air space, one "expansion" is said to have occurred.

The travel to maximum pressure is generally accepted as proportional to the travel, $u_0$, corresponding to the initial air space and called the "reduced length of the initial air space."

The value of $\frac{b}{2}$ or of $b$ will then contain a factor

$$1 - \frac{\Delta}{\delta}$$

As the pressure on the base of the bore is actually moving the mass of the projectile with a velocity $v$ and the mass of the powder charge with a velocity less than that of the projectile, it is doing work represented by

$$\frac{1}{2}\frac{wv^2}{g} + \frac{1}{2}\frac{\omega}{g} \cdot \kappa v^2$$

or

$$\frac{1}{2}\frac{wv^2}{g}\left\{1 + \frac{\kappa\bar{\omega}}{w}\right\}$$

in which $\kappa$ lies between zero and unity. Since $b$ is inversely proportional to the maximum pressure it follows that, if we are to consider pressures on the base of the bore (the ones measured), the factor

$$1 + \kappa\frac{\omega}{w}$$

will occur in the denominator of $b$. Hence $b$ will be of the form

$$b = Q\left(\frac{1 - \frac{\Delta}{\delta}}{1 + \kappa\frac{\bar{\omega}}{w}}\right)$$

The quantity $Q$, constant for a given gun, powder and projectile, is found by experiment to be of the form

$$Q = S\left(\frac{c'}{w}\right)^r$$

The exponent $r$ is nearly constant and has a mean value $\frac{1}{3}$ for widely varying conditions.

The coefficient $S$ has a value dependent on the form and size of the grains and on the inherent speed of combustion of the substance of the powder. The value of $b$, then, takes the form

$$b = S\left(\frac{c'}{w}\right)^{\frac{1}{3}}\left(\frac{1 - \frac{\Delta}{\delta}}{1 + \kappa\frac{\omega}{w}}\right)$$

The value of the constants entering $a$ and $b$ are found from the values of $a$ and $b$ for firings conducted with charges of various weights. The data from such firings should always include

1. The muzzle velocity, $V$
2. The maximum pressure, $\overline{P}$
3. The length of the rifled bore, $U$
4. The weight of the projectile, $w$
5. The weight of the powder charge, $\bar{\omega}$
6. The volume of the chamber, $c'$
7. The total volume of the bore, $C$
8. The description of the powder including the composition, content of moisture, grains, etc.

Then

$$V = \frac{aU}{b + U}$$

$$\overline{P} = \frac{16}{9} \cdot \frac{m}{\sigma} \cdot \frac{a^2}{b}$$

or

$$(C - c')\,\overline{P} = \frac{16}{9} m a^2 \frac{U}{b}$$

and

$$a^2 = V^2\left(\frac{b}{U} + 1\right)$$

so that

$$\frac{16}{9}\left(\frac{b}{U} + 1\right)^2 = \frac{b}{U} \cdot \frac{\overline{P}(C - c')}{mV^2}$$

and

$$\left(\frac{b}{U}+1\right)^2=\frac{9}{16}\cdot\frac{\overline{P}(C-c')}{mV^2}\cdot\frac{b}{U}=\frac{9}{32}\cdot\frac{\overline{P}(C-c')}{\frac{mV^2}{2}}\cdot\frac{q}{U}$$

The ratio of $\overline{P}(C-c')$ to $\frac{mV^2}{2}$ is that of the work done by a constant pressure equal to the maximum pressure acting over a path equal to the total travel of the projectile, to the actual work done in conferring energy of translation on the projectile over the same path. That is, it is the ratio of the maximum pressure to the mean effective pressure represented by the energy

$$\frac{1}{2}mV^2$$

which is the muzzle energy.

Representing the mean effective pressure by $p$, and the velocity corresponding to a constant pressure equalling the maximum pressure by $\overline{V}$, this ratio is

$$\frac{\overline{P}}{p}=\frac{2\overline{P}(C-c')}{mV^2}=\frac{m\overline{V}^2}{mV^2}=\left(\frac{\overline{V}}{V}\right)^2$$

so that

$$\overline{V}^2=V^2\left\{\frac{2\overline{P}(C-c')}{m}\right\}$$

and

$$\left(\frac{b}{U}+1\right)^2=\frac{9}{32}\left(\frac{\overline{V}}{V}\right)^2\cdot\frac{b}{U}=2\left(\frac{3}{8}\cdot\frac{\overline{V}}{V}\right)^2\cdot\frac{b}{U}$$

Placing

$$L=\frac{3}{8}\cdot\frac{\overline{V}}{V}$$

so that

$$L^2=\frac{9}{32}\cdot\frac{\overline{P}(C-c')}{mV^2}$$

in which

$$m=\frac{w}{g}$$

it follows that

$$\left(\frac{b}{U}+1\right)^2=2L^2\frac{b}{U}$$

whence

$$\frac{b}{U}=L^2-1-\sqrt{L^2(L^2-2)}$$

and

$$b=U\left(L^2-1-\sqrt{L^2(L^2-2)}\right)$$

$$a=V\left(L^2-\sqrt{L^2(L^2-2)}\right)$$

Thus $b$ and $a$ are readily calculated for each shot fired. The values of $a^2$ and of $b$ are calculated and recorded together with the data for the shot, the charge being varied.

To find the constants:

$$\frac{1}{2}\cdot\frac{w}{g}\cdot\frac{a^2}{\bar{\omega}}=E_0\Delta^q=E$$

and, $E$ being calculated for each shot, $E_0$ and $q$ are found from the relation

$$\log E=\log E_0+q\log\Delta$$

By plotting this relation on cross-section paper $\log E_0$ is found to be the value of $\log E$ corresponding to $\Delta=1$ for which $\log\Delta=0$. Then

$$\log q=(\log E-\log E_0)\div\log\Delta$$

by which means values of $\log q$ are found for different values of $\log\Delta$, and a mean value of $\log q$ is taken.

As regards $b$

$$b=S\left(\frac{c'}{w}\right)^{2/3}\left\{\frac{1-\frac{\Delta}{\delta}}{1+\kappa\frac{\bar{\omega}}{w}}\right\}$$

so that

$$1+\kappa\frac{\bar{\omega}}{w}=\frac{S}{b}\cdot\left(\frac{c'}{p}\right)^{2/3}\left(1-\frac{\Delta}{\delta}\right)$$

and

$$\frac{1+\kappa\frac{\bar{\omega}}{w}}{S}=\left(\frac{c'}{w}\right)^{2/3}\left(\frac{\delta-\Delta}{b\delta}\right)$$

The values of the second member are known for each value of $\bar{\omega}$, the value of $\delta$ being about 1.6, but for nitrocellulose powders it is more exactly given by the formula involving the content of moisture. For powders used in the United States its mean value is about 1.584, corresponding to about 5 per cent moisture and volatiles. As the grain diminishes in size the percentage of moisture is less. The values of $\left(1+\frac{\kappa\bar{\omega}}{w}\right)\div S$ are plotted as a function of $\bar{\omega}$, and if the graph be produced to a point corresponding to $\bar{\omega}=o$ the value of $\frac{1}{S}$ is the ordinate at that point. Both this graph and the preceding one should be generally taken as straight lines. Having drawn the straight line and knowing the value of $S$ at any point the value of $\kappa\frac{\bar{\omega}}{w}$ and hence of $\kappa$ is easily found and the inverse problem is completely solved.

The value of $S$ is dependent on the least dimension of the grain, called the «web thickness,» since when this is burned through, the grain is either completely consumed or else disintegrated. As grains, in the United States service, are of nitrocellulose powder and of a standard pattern, it is clear that the value of $S$ depends on the web thickness alone except that the content of moisture affects $E_0$ and also $S$, and it will cause considerable variations in these, corresponding to variations in moisture.

This method permits the experimental determination of the powder characteristics $E_0$ and $S$ and the quantity $\kappa$.

This latter is of considerable importance, as it is a measure of the work done on the gases themselves in giving to them a motion of translation and also in disturbing the mass of gas. This latter action may involve a great deal of energy and depends, to a large extent, on the shape of the chamber. Accordingly, $\kappa$ may have a value much greater than unity and its value has a decided bearing on the shape of the chamber, and consequently is important in the design of a gun. The pressures and velocities at any point of the bore may be

readily calculated, thus furnishing valuable data for gun design. Muzzle velocities and maximum pressures may be easily calculated for given conditions of loading. The direct problem is thus completely solved.

This method has been used with great success in the Coast Artillery Service of the United States Army, and a similar method is used at the School of Application at Fontainebleau.

The method is originally due to Captain Leduc, of the French Artillery, though the details of the method as here given have been developed in this country.

**Exterior Ballistics.**—A projectile in flight describes a curve called its trajectory. This trajectory is a curve of which the vertical height is related to the horizontal distance traveled in a manner dependent on the circumstances of its motion. The origin is usually taken as the muzzle of the gun; the horizontal distance to any point on the trajectory being represented by $x$ and the height above the origin by $y$, both in feet. The velocity in its path of the projectile at this point is represented by $v$, the inclination of the path to the horizontal by $\theta$, the time of flight from the origin to $(x,y)$ by $t$. The curve (due to the action of gravity) is convex upwards and has a maximum ordinate or greatest height represented by $y_0$, corresponding to a horizontal distance or range $x_0$.

At this point the inclination is zero. At the origin $x$ and $y$ are zero, $\theta$ is represented by $\phi$, $v$ by $V$; $t$ is zero. The point at which the projectile again finds itself at the level of the gun is called the "point of fall."

The law of motion already presumed gives the following relations:

$$\frac{d^2x}{dt^2} = \frac{d\,(v\cos\theta)}{dt} = \frac{-F(v)}{C}\cos\theta$$

$$\frac{d^2y}{dt^2} = \frac{d\,(v\sin\theta)}{dt} = \frac{-F(v)}{C}\sin\theta - g.$$

From these

$$\frac{d\,(v\cos\theta)}{d\theta} = \frac{v\,F(v)}{gC}$$

$$\frac{v\,d\theta}{dt} = -g\cos\theta$$

$$dt = \frac{v}{g}\sec\theta\,d\theta$$

$$dx = v\cos\theta\,dt = \frac{-v^2}{g}\odot d\theta$$

$$dy = v\sin\theta\,dt = \frac{-v^2}{g}\odot\tan\theta\,d\theta$$

As the trajectory is a curve of relation between $x$ and $y$, so that

$$y = f(x)$$

it is readily shown from the above relations that

$$y' = \frac{dy}{dx} = \tan\theta$$

$$y'' = \frac{d^2y}{dx^2} = \frac{-g}{v^2\cos^2\theta}$$

$$y''' = \frac{d^3y}{dx^3} = \frac{-2}{g}\odot\frac{y''^2}{\sqrt{1+y'^2}}\odot\frac{F(v)}{C}$$

$$= \frac{-2g}{v^4\cos^3\theta}\odot\frac{F(v)}{C}$$

It is thus clear that, with a known relation between $v$ and $F(v)$ the trajectory may be, theoretically at least, completely defined in terms of $x$, $y$, and constants. On the other hand, if the form of the trajectory is completely defined, $F(v)$ in its relation to $v$ will be determined. There are thus two ways of approaching the subject, and the problems involved in the two cases are known as the "direct" and the "inverse" problems. The direct problem is based on values of $F(v)$ derived from firings through screens, the time of passage being electrically recorded, and the rate of loss of velocity thus found. Determinations of $F(v)$ in various countries differ considerably; and experimental firings have recently been conducted to further define the law. These firings are all made almost horizontally and the effect of the inclination of the projectile on its presentation to the air is thus not experimentally known. It is certain, however, that in high angle fire (as with mortars, regarding which many data are available), the air resistance is greatly increased,—in many cases almost doubled, and that this effect increases with the inclination. The inverse problem, therefore, is one of great importance for several reasons, among which is the fact that a great mass of data is available, and the additional facts that such data proceeded from actual practical firings and that conclusions deduced by proper methods from such data must duplicate the results obtained in practice.

The theoretical treatment of the subject, however, affords a safe guide in the process of solving the inverse problem and gives a clear indication of the form of the equation of the trajectory. Upon supposing that there is no air resistance a limiting form is secured, affording a minimum number of terms of the expression for $y$ in terms of $x$. This is the *condition in vacuo*.

The equation immediately takes the form

$$y = x\tan\phi - \frac{gx^2}{2V^2\cos^2\phi}$$

and

$$y' = \tan\theta = \tan\phi - \frac{2gx}{2V^2\cos^2\phi}$$

$$y'' = \frac{-2g}{2V^2\cos^2\phi}$$

$$y''' = 0$$

for this condition.

From the equations of motion in air it is clear that any one of the variables $x$, $y$, $t$, $\theta$ $v$, may be expressed in terms of any other of them and hence every one of these may be expressed in terms of $x$. As complete integration is not

always feasible, it follows that in the general case the variable in question will be expressed in terms of ascending powers of $x$. The equation of the trajectory, then, takes the general form

$$y = x\tan\phi - \frac{gx^2}{2V^2\cos^2\phi}\left\{1 + ax + bx^2 + etc\right\}$$

$$\frac{dy}{dx} = \tan\phi - \frac{2gx}{2V^2\cos^2\phi}\left\{1 + \frac{3}{2}ax + 2bx^2 + etc\right\}$$

$$\frac{d^2y}{dx^2} = \frac{-2g}{2V^2\cos^2\phi}\left\{1 + 3ax + 6bx^2 + etc\right\}$$

$$\frac{d^3y}{dx^3} = \frac{-2g}{2V^2\cos^2\phi}\left\{3a + 12bx + etc\right\}$$

whence

$$\tan\theta = \tan\phi - \frac{2gx}{2V^2\cos^2\phi}\left\{1 + \frac{3}{2}ax + 2bx^2 + etc\right\}$$

$$\frac{V^2\cos^2\phi}{v^2\cos^2\theta} = 1 + 3ax + 6bx^2 + etc$$

$$\frac{F(v)}{C} = \frac{v^4\cos^2\theta}{2V^2\cos^2\phi}\left\{3a + 12bx + etc\right\}$$

By this means a set of actual firings may be used to determine the law of motion of the projectile since the muzzle velocity, $V$, the angle of departure, $\phi$, and the values of $y$ and $x$ for the point of impact are measured.

The value of $F(v)$ is readily placed in the form

$$\frac{F(v)}{v^2C} = \frac{3}{2}\left(\frac{v^2\cos^2\theta}{V^2\cos^2\phi}\right)\left\{a + 4bx + etc\right\}\cos\theta$$

$$= \frac{3}{2}\left\{\frac{a + 4bx + etc}{a + 3ax + 6bx^2 + etc}\right\}\cos\theta$$

Now, $\cos\theta$ is readily expressed in terms of $x$, since $\tan\theta$ is so expressed, and

$$\cos\theta = \frac{1}{\sqrt{1 + \tan^2\theta}}$$

Hence $\frac{F(v)}{v^2C}$ is directly expressed as a function of $x$.

When $x$ becomes zero $v = V$, and $\theta = \phi$, and hence

$$\frac{3}{2}a = \frac{FV}{V^2C\sec\phi}$$

or

$$a = \frac{2}{3}\cdot\frac{F(V)}{V^2}\cdot\frac{\cos\phi}{C}$$

Hence

$$\frac{F(v)}{v^2}\times\frac{V^2}{F(V)} = \frac{1 + 4\frac{b}{a}x + etc}{1 + 3ax + 6bx^2 + etc}\cdot\cos\theta\cdot\cos\phi$$

On taking successive derivatives with respect to $x$, and noting the relations of $v$ and $\theta$ to $x$, the values of $b$ and subsequent coefficients are determined in terms of $F(V)$, $V$, and the successive derivatives of $F(V)$ with respect to $V$. It is quite clear that $\phi$ will invariably enter each value. This method is general, and finds useful application both in the case of high power guns with small values of $\phi$ and in the case of howitzers and mortars, since the velocity $v$, the angle $\theta$, and all other elements may be directly found. The value of $t$ is given by the relation,

$$Vt\cos\phi = \int_0^u \sqrt{(1 + 3ax + 6bx^2 + etc)}\,dx$$

Whence

$$\frac{Vt\cos\phi}{x} = 1 + \frac{3}{4}ax + \left(b - \frac{3}{8}a^2\right)x^2 + etc$$

Where the value of $\phi$ is large the solution of the inverse problem is practically essential, in the light of recent ballistic firings. Where the angle $\phi$ is less than 15°, however, a method due to the eminent Italian authority, Siacci, greatly simplifies the problem and permits very satisfactory discussion of the trajectories of direct-fire guns. An auxiliary variable known as the "pseudo-velocity," is characteristic of his method. Its value is given by the equation

$$u = v\cos\theta\sec\phi$$

In connection with this he assumes the relation

$$F(v) = \beta F(u)\cos^2\phi\sec\theta$$

in which $\beta$ is a quantity which, for direct fire, is very nearly unity. Its values are usually tabulated with the values of $\phi$ and $X$ as arguments.

Wherever Siacci's method is used the value of $C$ will be understood to include the factor $\beta$ in its denominator. With these modifications the following relations are found:

$$\frac{du}{uF(u)} = \frac{\cos^2\phi}{gC}\,d\tan\theta$$

$$dt = -C\sec\phi\,\frac{du}{F(u)}$$

$$dx = -C\frac{udu}{F(u)}$$

$$dy = -C\frac{udu}{F(u)}\left(\tan\phi - \frac{C}{2\cos^2\phi}\left\{I(u) - I(V)\right\}\right)$$

in which

$$I(u) = \int_0^u \frac{-2gdu}{uF(u)}$$

Placing

$$S(u) = \int_0^u \frac{-udu}{F(u)}$$

$$T(u) = \int_0^u \frac{-du}{F(u)}$$

$$A(u) = \int_0^u I(u)\,dS(u)$$

the solution of the problem appears in the equations

$$y = x\tan\phi - \frac{C^2}{2\cos^2\phi} - \left\{\frac{A(u) - A(V)}{S(u) - S(V)} - I(V)\right\}$$

$$\tan\theta = \tan\phi - \frac{C}{2\cos^2\phi}\left\{I(u) - I(V)\right\}$$

$$t = C\sec\phi\left\{T(u) - T(V)\right\}$$

$$x = C\left\{S(u) - S(V)\right\}$$

It is clear from the above that the value of

$$\frac{1}{F(u)}$$

is more convenient than that of $F(u)$. Such a value may be found in ascending powers of $u$ beginning with a term involving $\frac{1}{u^2}$, or in other words

$$\frac{u^2}{F(u)}$$

may be determined by a series the first term of which is a constant; and the other terms involve regularly ascending powers of $u$. With complete and absolutely satisfactory data the curve of these values may be found and the direct problem for direct fire is completely solved when $\beta$ is known.

One of the most recent available experimental determinations of $F(v)$ is that of the Gâvre Commission, and certain broad characteristics are noted. They are:

1. Between zero and 800 feet per second $F(v)$ is roughly proportional to $v^3$.
2. Between 800 and 1,600 feet per second it is roughly proportional to $v^4$.
3. Between 1,600 and 3,600 feet per second it is roughly proportional to $v^{5\frac{1}{2}}$.

These three classes correspond respectively to the fire of

1. Howitzers and mortars
2. Field guns
3. Seacoast guns

In these three cases the character of $F(v)$ is such that it may be represented, for certain purposes, by

$$F(v)=Bv^n$$

in which $B$ and $n$ are constants. In such cases the equation of Siacci's trajectory is

$$y=x\tan\phi-\frac{gx^2}{2V^2\cos^2\phi}\left\{1+ax+bx^2+cx^3+etc\right\}$$

in which

$$a=\frac{2}{3}\odot\frac{BV}{C}n\text{-}2$$

$$b=\frac{4-n}{6}\left(\frac{BV}{C}n\text{-}2\right)^2$$

$$c=\frac{(4-n)\ (6-2n)}{30}\left(\frac{BV}{C}n\text{-}2\right)^3$$

etc.

For the values $n=4$ and $n=\frac{4}{3}$ the equations take the simple forms:

1. For $n=4$

$$y=x\tan\phi-\frac{gx^2}{2V^2\cos^2\phi}\left(1-\frac{2}{3}\cdot\frac{BV^2}{C}x\right)$$

2. For $n=\frac{4}{3}$

$$y=x\tan\phi-\frac{gx^2}{2V^2\cos^2\phi}\left(1-\frac{2}{3}\cdot\frac{BV^{-2/3}}{C}x\right)^{-1}$$

The first is a cubic parabola and the second an hyperbola. As these two values of $n$ mark extreme limits of its average values these two trajectories may be regarded as limiting ones between which all others will lie.

Placing

$$\frac{gX}{V^2\sin 2\phi}=M$$

and placing $y=0$ in each of the two cases, the value of $x_0$, for the summit is given by

$$\frac{x_0}{X}=\frac{\sqrt{M^2+3(1-M)}-M}{3(1-M)}\quad\text{for } n=4$$

$$\frac{x_0}{X}=\frac{1}{1+\sqrt{M}}\quad\text{for } n=\frac{4}{3}$$

At the point of fall $y=0$ and

For $n=4$

$$\frac{V^2\sin 2\phi}{gX}=\frac{1}{M}=1+\frac{2}{3}BV_{n\text{-}2}\frac{X}{C}$$

$$\frac{\tan\omega}{\tan\phi}=2-M$$

For $n=\frac{4}{3}$

$$\frac{gX}{V^2\sin^2\phi}=M=1-\frac{2}{3}BV_{n\text{-}2}\frac{X}{C}$$

$$\frac{\tan\omega}{\tan\phi}=\frac{1}{M}$$

Differential formulæ for range changes give the following relations for all values of $n$:

$$\frac{dX}{X}=\left(2-n+n\frac{\tan\phi}{\tan\omega}\right)\frac{dV}{V}+\left(1-\frac{\tan\phi}{\tan\omega}\right)\frac{dC}{C}+\frac{\tan\phi}{\tan\omega}\odot\frac{d\sin 2\phi}{\sin 2\phi}$$

Placing $n=4$ and $n=\frac{4}{3}$ in this equation together with the corresponding values of $\frac{\tan\phi}{\tan\omega}$ the following limiting values are found:

For $n=4$

$$\frac{dX}{X}=\frac{2M}{2-M}\odot\frac{dX}{X}+\frac{1}{2-M}\frac{d\sin 2\phi}{\sin 2\phi}+\frac{1-M}{2-M}\odot\frac{dC}{C}$$

For $n=\frac{4}{3}$

$$\frac{dX}{X}=\frac{4M+2}{3}\odot\frac{dV}{V}+M\frac{d\sin 2\phi}{\sin 2\phi}+\left(1-M\right)\frac{dC}{C}$$

For values of $M$ at intervals of $\frac{1}{6}$, these coefficients, represented in order by $Q$, $R$ and $S$, show the following values:

| | $n=4$ | | | $n=\frac{4}{3}$ | | |
|---|---|---|---|---|---|---|
| M | Q | R | S | Q | R | S |
| ⅓ | .500 | .600 | .400 | 1.111 | .333 | .667 |
| ½ | .667 | .667 | .333 | 1.333 | .500 | .500 |
| ⅔ | 1.000 | .750 | .250 | 1.556 | .667 | .333 |
| ⅚ | 1.429 | .857 | .143 | 1.778 | .833 | .167 |
| 1 | 2.000 | 1.000 | .000 | 2.000 | 1.000 | .000 |

This shows that there is a wide difference in coefficients in the interpolation formulæ, and that the value of $\frac{\tan\phi}{\tan\omega}$ should be found before using these formulæ except in making the corrections in the original ranges, when the value of $n$ may be assumed as indicated for the general class of firings to which it belongs and the coefficients $Q$, $R$ and $S$ found by interpolation for the value of $M$ under

consideration. The corrections may be subsequently recalculated. In correcting the data of firings, corrections for wind are also needed. The correction in feet for a wind in the plane of fire is

$$dX\, n\left(1-\frac{\tan\phi}{\tan\omega}\right) W\, T^{5/4}$$

in which $n$ is the exponent of $v$ in the expression

$$Bv^n$$

$W$ the wind velocity in miles per hour, if it is in the plane of fire; otherwise $W$ is the *component* of the wind in the plane of fire, and $T$ the time of flight in seconds.

Deflections in degrees due to cross-wind and drift, also in degrees, are given by the formulæ

$$\text{Wind deflection} = \frac{84W}{V\cos\phi}\left\{\frac{V\,T\cos\phi}{X}-1\right\}$$

$$\text{Drift} = \left(1-\kappa\right)\frac{d^3}{wn^1}\left(\phi+\bar{\omega}\right)\sec\phi$$

in which $W$ is the cross-wind component in miles per hour, $\kappa$ a coefficient having a value 0.75 for direct fire and 0.80 for high angle and curved fire, and $n^1$ the number of calibres that the projectile passes over in making one turn around its axis due to the action of the rifling.

In the solution of the inverse problem corrections should first be made for all slight variations in conditions from the mean conditions existing at the time of the experiments; so that for each group of shots fired the ranges will be reduced to a common value of $\phi$, and the whole series to a common muzzle velocity and ballistic coefficient.

ALSTON HAMILTON,
*Fort Monroe, Virginia.*

**BALLON D'ESSAI** (Fr., a trial ballon), in diplomatic language denotes an effort to see "which way the wind blows." Ballons d'essai are usually launched unofficially to test public opinion; a "feeler" or "kite."

**BALLOON.** A lighter-than-air vehicle for rising into the atmosphere and traveling through it. It consists essentially of a bag-like receptacle of air-tight material filled with hydrogen, coal-gas or other gaseous material lighter than air, of such bulk when distended as shall displace a mass of air of greater weight. To this gas-bag is attached a basket or "car" to accommodate the passengers, if any, and the recording instruments. A *free* balloon floats in the air whither the wind carries it, or it may be driven in a desired direction by suitable screw-propellers. A *captive* balloon is attached by cable to an anchorage on the ground. Small toy balloons, six feet high by three feet across, are made of paper and the air within them rarified by the heat from a wad of asbestos saturated with alcohol or other inflammable fluid, fixed on cross wires at the centre of a wide mouth. They rise to the height of nearly a mile and in a still atmosphere travel several miles before coming to earth. See AERONAUTICS, HISTORY OF.

**BALLOT** ("little ball"): essentially, a secret as distinguished from an open vote, to secure the voter from previous intimidation or subsequent revenge. Recent methods of ballot-reform, therefore, are only devices to obtain the result inherent in its very nature, a non-secret ballot being a contradiction in terms and the same as viva voce voting. The various forms of ballot reduce to two in essence: ballots themselves indicating choice,—as colored balls, printed tickets or mechanical devices showing names,—and depositories indicating the choice. The former is universal in modern times and most general in ancient.

**History.**—The ballot must be nearly as old as the practice of voting by unprotected bodies of citizens; but our first knowledge of it is in classic Greece, where the *dikasts* (popular courts and juries) voted "yes" or "no" by balls of stone or metal (white or unpierced meaning acquittal, black or pierced indicating condemnation), by marked shells (*ostrakoi*, whence "ostracism" or banishment of an unpopular leader), or by olive leaves ("petalism"). In the assemblies the common voting was by show of hands, to secure public responsibility; in cases of privilege or ostracism it was by ballot. In Rome the first ballot law (though far from the first balloting) was the Gabinian, 139 B.C., and the machinery is very modern: *tabellæ*, or tickets, with candidates' names, or "yes" and "no" ballots for changes in the laws; boxes, inspectors and check-lists; but in case of a tie the candidates drew lots. In the mediæval republics the ballot was a regular machinery; but it has been bitterly fought and slow of introduction in all non-republican countries, the governments and the privileged classes being loath to weaken their power of dragooning their officials or the lower classes into obedience. In Scotland it was used in 1662 under the name of "billeting," to banish political opponents (ostracism); but the English government disallowed the act. In England it was first put forward to protect members of Parliament against government revenge for voting against its bills, not the electors against the classes which furnished the members of Parliament; in 1710 the House of Commons passed a ballot law, but the Lords threw it out.

In the modern world the American colonies of England were by far the first to make the ballot (voting "by papers") the foundation of the government system; they used it from the first, and it was made obligatory in several of the State Constitutions adopted in 1776. New York, with its great landed aristocracy, was slower, using it only for the governor and lieutenant-governor in 1778, and not extending it to the legislature till 1787. The Southern States held to the viva voce system for many years after, and Kentucky till 1891, its Constitution providing for it, though the United States statutes compelled it to use written or printed ballots for Congressional elections. All the State Constitutions now provide for elections by ballot.

In Great Britain it was not only fought by the privileged classes as overthrowing their leadership of the tenants and artisans, but by a large part even of the Liberals as undermining the manliness of the English character. The vanguard of the movement were the Benthamites, and it stood foremost in the program of reform put forward by the more radical Whigs early in the 19th century. It was in the first draft of the Reform Bill of 1832; in 1833 Grote the historian introduced it, and re-

peated the attempt every year till 1839 with a fresh speech of immense force and learning. It was supported by Macaulay with his usual effectiveness, but was sneered at by so good a Liberal as Sydney Smith, and heartily supported by none but the Chartists, whose support alone would have killed it. They made it one of the "six points" of their "People's Charter." In 1851 it was carried in the Commons by 51 majority against Lord John Russell and his Liberal government, but went no further. In 1869 it was tried at Manchester as a test, and worked well; was adopted at school-board elections in 1870; and the same year a select committee of the House, headed by Lord Hartington, reported in its favor as a means of lessening corruption, "treating," and intimidation. In 1872 Mr. W. E. Forster's Ballot Act made printed ballots compulsory at all national and municipal elections except those of university candidates for Parliament. This put an end to the drunken riots attending the previous public nominations at the hustings, so keenly satirized by Dickens and others.

In France, Spain, Belgium, Switzerland and Cisleithan Austria the ballot is now used; in Hungary it was formerly employed in all elections, but in 1874 was restricted to municipal councils.

**Ballot Secrecy.**— The interest of governments and privileged classes in aristocratic countries to defeat the secrecy of the ballot is replaced in democratic ones, of which the United States is chief, by the interest of party managers, who wish either to prevent independent voting through fear of loss of employment or favor or to make sure of purchased votes being given as promised; they have therefore devised various methods of evading the nominal secrecy of the vote, such as ordering the voter to write his name or some understood sign on the ballot before depositing it, holding it in sight of the party watcher while casting it, having a "friend" accompany him to the polls on pretense of his illiteracy and inability to go through the legal forms without help, etc. These enforce as constant a struggle from the guardians of political honesty to circumvent them: the first has been stopped by throwing out as illegal all ballots with distinguishing marks on them; the second by compelling them to be cast in sealed official envelopes, and by forbidding any but the official registrars to come within a certain distance of the polls for any purpose but to vote, and later by providing booths in which each voter prepares his ballot in privacy; the third is practically confined to certain States and cities with a large percentage of real illiteracy under which the feigned article can cover itself and cannot well be directly reached by law, but only by the vigilance of each party in exposing the fraudulent practices of the other. The ballot itself also has brought in many frauds for which the viva voce system gave no opportunity, which are reducible to three kinds: (1) Counterfeiting, either by printing the name of one party over the candidates of another, or by substituting one or more names on the opposite party's ticket; (2) "stuffing" the ballot-box by folding two or more ballots, all but one being sometimes of tissue paper, to look like one; (3) "repeating," one man voting at different polling-places more than once or at the same one under different names. The first must be defeated by party vigilance; the second is used only where one party has the control of ballot inspection, though the law usually provides that both the chief parties shall have a share in this; the third and second are punishable by law.

Another evil, as diminishing individual responsibility for votes and building up unprincipled and corrupt party dominance though not direct fraud like the others, is the "party ballot." This is due to the great multiplication of candidates to be voted for at one time, and the consequent cost of printing and distributing the ballots to voters, which has led to the abandonment of the candidates themselves doing this work, and the forming of party organizations for it, which, in return for their efforts, insist on subservience and are apt to have slight scruples about gaining their ends. All these evils together — the misuse of ballot methods to pervert their intent, the only partial secrecy and the supremacy of party in the voting — have latterly built up a great body of opinion that some better methods should be devised, the general movement being known as "ballot reform."

**Australian Ballot.**— The Australian or official ballot was first used and developed in South Australia, and after its introduction in the United States in 1888 soon replaced the party ballot in many States. Its essential feature is that all candidates in the field for any office shall be placed on one ballot and the voter compelled to indicate his preference by a mark opposite the name of one. The ballot is official, compiled, printed and placed in the polling places under the direction of public officials and at public expense. Under the "Australian plan" the voter is compelled to think personally of each candidate, which invites independence of judgment, breaks down the tyranny of the party vote and instils some intelligence into the "brute vote," even though the name of the party of each candidate be added. The first Australian Ballot Law in the United States was enacted by Kentucky in 1888, but the law applied only to the election of certain officials of Louisville. In the same year Massachusetts passed a law which became effective the next year providing for the use of this ballot in State elections. Since that time every State in the Union, save Georgia and Louisiana, has adopted some form of the Australian ballot.

Some of the modifications have been important, due chiefly to struggles of the local organizations either to defeat the secrecy of the ballot and keep account of the purchased votes, or to prevent "scratching" and ensure the voting of "straight tickets." In short this would emasculate the system of its vital principle. Fully 90 per cent of the States have provided for an official "blanket ballot," wherein, in one arrangement or another, are given the names of all candidates who have been duly nominated by the various parties or organizations of voters for the offices to be filled at the approaching elections. There are a few exceptions, however. While Missouri and New Mexico provide the official ballots at public expense, a separate ballot is required for each party. In Georgia and South Carolina the preparation and distribution of the ballots are

left entirely to the voters, and in the former it is not even required that the ballots be uniform in size, shape or color.

**Forms.**— More than 40 States have adopted the official "blanket ballot" but their methods of arranging the names of the candidates on the ballot vary considerably. In 31 States the ballot has a party column, the candidates of each party being arranged vertically under the name of the party, and in all but 12 States the column is headed by the party emblem. This was done on the nominal ground that the illiterate voters and a large part of those not technically such do not wish to vote anything but the "straight party ticket" and should not be hindered in their choice, much less deprived of it. Hence in all but two of the party column States (Iowa and Montana) provision is made so that the voter may easily vote "straight"— usually by marking a cross (X) in the square or circle under the party name or emblem at the head of the column which the illiterate voter can be taught to recognize. If a voter desire to "scratch" the ticket (for instance, if he wish to vote for the Republican candidate for governor, the Democratic candidate for lieutenant-governor and the Progressive candidate for comptroller) he either marks a cross (X) in the circle at the head of one party column and then an X after each candidate not on his party ticket; or he omits the cross in the top circle altogether and marks a cross after the name of every candidate for whom he wishes to vote. The "Massachusetts" or "office-group" form of ballot is used in 14 States. On this ballot the names of all candidates for each office (usually in alphabetical order) are grouped together, each name being accompanied by the name of the party nominating him. While the obvious intent of this is to compel the voter to think, Colorado, Nebraska and Pennsylvania, though using the form, have adopted devices making especially easy the voting of a straight party ticket. States which use the Massachusetts form of ballot provide that the name of no candidate for a single office shall be used more than once upon the ballot and in these States this provision works no hardship; but this limitation is found in 14 States which have the "party column" ballot and the effect is to discourage fusion in nominations.

**Dangers and Problems.**— As stated above, the ballot itself has not rid the political system of its many attendant evils. The rapidity with which the Australian ballot was adopted was due to the fact that the politicians believed they could appropriate it to serve their own purposes; and that they have done so shows that good government depends primarily on the intelligence, honor and integrity of the voter and not on the devices that are placed at hand for his use. Undoubtedly there are less open intimidation and coercion and the voting places are not so often the scenes of riot and disorder, but the complexity of ballot legislation has been used by party organizations to their own good advantage. The politician prefers the "party column" ballot since he can easily teach the illiterate element among the voters to look for the party emblem and make his cross in the circle provided, which of course entails the minimum of thought and effort. With most of the newer voting devices, an effort to scratch the ticket is very liable to render the ballot void and for this reason, if for no other, independent voting is usually light. Party organization also receives a legal sanction from the Australian ballot and in some States the party leaders thereby are given great power in determining those to receive party recognition either as candidates or voters. Often too the number of votes cast by political groups at some elections is insufficient to meet the prohibitive legal requirements, and thus, though they have the promise of effective leadership, their names would not appear on succeeding ballots.

In numerous places the ballots have assumed immense proportions, that used in New York city election of 1909 being 15 inches wide and 46 inches long and containing 18 party columns (although 13 of these were entitled "Independent Nominations") besides one blank column for the voter to insert the names of those for whom he desired to vote. Several of the columns contained the names of candidates for all 21 offices to be filled, while some contained the name of the mayoralty candidate only and one party had made no nominations but held its place on the ballot because at the preceding election it had polled sufficient votes to meet the legal requirements.

Several States have been experimenting for some time with various forms of ballots, Wisconsin using a coupon ballot, while in Cambridge, Mass., and Grand Junction, Col., a preferential ballot has been used so that a voter could express a "first choice," "second choice" and "other choices." In the Oregon primary elections a candidate may place after his name a concise statement of his principles. The initiative and referendum in many States are making the ballots still more complex and confusing. In 1912 the Oregon ballot contained the names of 177 nominees for 44 National, State, and local offices, besides 37 legislative projects, 14 of which involved amendments to the State Constitution. In many States voting machines (q.v.) are used.

**Short Ballot.**— It is apparent that some method must be adopted to make the ballot short and simple and also to keep the processes determining its content and arrangement under the control of the voters and not of irresponsible party managers. It is inevitable that blind voting will occur when the ballot contains, as in some instances, 500 names.

As regards the use of the short ballot in cities, the question of government by commission is involved. Under this form of government the mayor and a large council of numerous divided powers are replaced by a small commission. In New Jersey it would apply to county and State. There a small commission having the power of county management is proving its efficiency. The voters of the State elect a governor and a bicameral legislature but do not vote for any other State officer, not even the lieutenant-governor. Thus the responsibility for good administration is centralized in one man instead of being scattered among a number of elected department heads with divided and conflicting powers. Hence the advocates of the short ballot urge that it be adopted so as to remove all minor offices and some important ones from the ballot, with

the object of increasing the accountability of the few men who are elected and also of raising the standard of intelligence of the popular vote. See ELECTIONS; ELECTORAL VOTES; ELECTORAL QUALIFICATIONS; ELECTORS; POLITICAL SCIENCE; SUFFRAGE; NATURALIZATION; WOMAN SUFFRAGE; PRIMARY, DIRECT; COMMISSION GOVERNMENT; UNITED STATES — BEGINNINGS OF PARTY ORGANIZATION; INITIATIVE AND REFERENDUM; CORRUPT PRACTICES ACTS; VOTE, VOTERS, VOTING.

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**BALLOU, Hosea,** American clergyman and author: b. Richmond, N. H., 30 April 1771; d. Boston, Mass., 7 June 1852. His boyhood was spent in the greatest poverty, but at 21 he began to preach, having adopted the Universalist doctrines. He was successively pastor of congregations in Dana, Mass.; Barnard, Vt.; Portsmouth, N. H., and Boston, Mass., in which latter place he held his pastorate for more than 35 years. He founded the *Universalist Magazine*, subsequently called *The Universalist Expositor*, and again the *Universalist Quarterly Review*. He was active in the organization of the Universalist denomination, and helped greatly to extend its work and influence. A voluminous writer, his chief works are 'Notes on the Parables' (1804); 'Lecture Sermons' (1831); 'Examination of the Doctrine of Future Retribution' (1834), his most important contribution to theological literature. His published works would make more than a hundred 12mo volumes. For an account of his life consult the biographies by O. F. Safford (Boston 1889) and T. Whittemore (4 vols., ib. 1855). Consult also Adams, J. C., 'Hosea Ballou and the Gospel Renaissance of the Nineteenth Century' (Chicago 1903).

**BALLOU, Maturin Murray,** American journalist, son of Hosea Ballou: b. Boston, 14 April 1820; d. 27 March 1895. Besides editing *Ballou's Pictorial*, *The Flag of Our Union*, *Ballou's Monthly*, etc., and making a valuable compilation of quotations, he wrote 'History of Cuba' (1854); 'Biography of Hosea Ballou,' 'Life Work of Hosea Ballou.' Becoming in later life an extensive traveler, he wrote a number of books of travel, including 'Due West,' 'Due South' (1885); 'Due North,' 'Under the Southern Cross,' 'Footprints of Travel,' etc. In 1872 he became one of the founders and the editor-in-chief of the Boston *Globe*.

**BALL'S BLUFF,** Va., a point on the Potomac River, about 33 miles above Washington, where the bank rises about 150 feet above the level of the river. It is noted as the scene of a battle between a Union force under Col. Edward D. Baker, and a Confederate force under the command of General Evans, 21 Oct. 1861. The battle resulted in the serious defeat of the Union force and the death of Coloner Baker.

**BALLSTON SPA,** N. Y., county-seat of Saratoga County, on the Delaware & Hudson Railroad, seven miles southwest of Saratoga Springs. It has some reputation as a summer and health resort and is noted for its mineral springs, which rank among the best acidulous chalybeate springs in the country. The water flows from a depth of 650 feet through a tube bored into the solid rock, and is highly effervescent. The village has a county courthouse, fair grounds and track, the Saratoga County almshouse and hospital, and the Spa sanitorium. The industries include a large tannery, foundries and machine shops, a shirt waist and textile factory, extensive pulp and paper mills, and agricultural implement factories. It has two National banks, several churches, public high school and daily and weekly newspapers. Settled in 1787, it was incorporated in 1807. Town meetings are held every two years and charter elections annually. The board of education, the village president and the board of trustees are chosen by popular vote. The waterworks are owned and operated by the village.

**BALLYMENA,** Ireland, a market town in County Antrim, on the river Braid, 33 miles northwest of Belfast. It has a cotton-spinning mill, a distillery, numerous bleaching-grounds, a church, chapel, large public schools, several branch banks and a United States consular agency. It is an important railway centre. Pop. (1911) 11,381.

**BALM** (*Melissa officinalis*), a perennial herb of the family *Menthaceæ*, native of southern Europe, cultivated for culinary use and found wild as an escape in many countries. It attains a height of about 18 inches, is much branched, has ovate leaves and whorls of white or yellowish axillary flowers rich in nectar, for which the plant is sometimes cultivated as bee-forage. Its foliage, which has a lemon-like odor and slightly aromatic taste, is used to flavor wine and to a small extent in domestic medicine. Some other members of the *Menthaceæ* are called balm — for instance: Bastard balm (*Melittis melissophyllum*), a handsome plant, often dried for its long-enduring fragrance; Moldavian balm (*Dracocephalum moldavica*), a Siberian annual of less pleasant qualities than true balm, largely used in Germany for flavoring. Horse balm (*Collinsonia canadensis*) and tea balm (*Monarda didyma*) are American species of little importance. For cultivation see HERBS (*Culinary*).

**BALM OF GILEAD,** a liquid resinous balsam highly reputed in the East since Bible times for its fragrance and supposed medicinal properties, believed to be derived from *Commiphora opobalsamum*, a small Abyssinian and Arabian tree. Balm of Mecca, or opobalsam, is a specially high grade of balm of Gilead ob-

tained from incisions in the bark. The wood and fruit are boiled to obtain the inferior grades. The balm of Gilead of the United States is a variety of poplar (*Populus balsamifera*, var. *candicans*). See POPLAR.

**BALMACEDA,** băl-mą-să'dą, **José Manuel,** Chilean statesman: b. Santiago 1838; d. 18 Sept. 1891 by suicide. He was educated at the Seminario Conciliar in Santiago; early became noted as an orator, urging radical reforms in the Constitution of 1833; and was a founder of the Reform Club in 1868. As deputy for five terms, 1870–85, he urged the separation of church and state and became the leader of the Progressives. He was Chileon Minister at Buenos Ayres in the early part of the Chile-Peruvian War, 1879–83, and secured the neutrality of Argentina. In 1882 he was made Minister of the Interior, and introduced liberalizing bills, as for civil marriage, etc. In 1885 he was elected senator and appointed Minister of Foreign Affairs. Elected President in 1886, he carried out large schemes of reform and democratization; popular education was extended, civil marriage carried in 1888, railroads and other internal improvements forwarded. But both his measures and men involved war against the clerical oligarchy which not only ruled the state but monopolized the offices, and possessed the bulk of the property and influence; and when he tried to prevent the ruin of his work by "influencing" the election of a like successor, his opponents blocked the administration. He appointed a ministry of his own stripe and dissolved Congress, virtually making himself dictator; but the Congressionalists, having the naval officers on their side, began war 7 Jan. 1891, secured the nitrate provinces, and, using their revenues to buy the best arms and munitions, utterly routed Balmaceda's forces in a decisive battle near Valparaiso, 7 August. He took refuge in the Argentine legation at Santiago, and died there a few weeks later.

**BALME,** băm, **Col de,** an Alpine pass, forming the boundary between Savoy and the Valais, 7,218 feet above sea-level. It is much visited, and has a travelers' refuge.

**BALMERINO,** băl-mer-ē'nō, **Arthur Elphinstone,** LORD, Scottish Jacobite: b. 1688; d. 1746. He took part in the rebellion of 1715, and fought at Sheriffmuir. Having joined the Young Pretender in 1745, he was taken prisoner at Culloden, tried at Westminster, found guilty and beheaded. His title was from Balmerino, in Fife.

**BALMES,** băl'měz, **Jaime Luciano,** Spanish priest and author: b. Catalonia, 28 Aug. 1810; d. 9 July 1848. His works include 'Protestantism Compared with Catholicism in Its Relation to European Civilization' (3 vols., 1848); 'Filosofia Fundamental,' 'Letters to a Sceptic on Religious matters.'

**BALMONT, Kónstantin Dmitriyévitch,** Russian poet: b. on his father's estate, near the village of Gumnishtché, in the government of Vladimir, 15 June 1867. His education was much interrupted: he was expelled from the seventh class of the Gymnasium, being suspected of secret political activity. He later attended the University of Moscow, intending to prepare himself for the profession of the law; but again he was implicated as one of the leaders in student uprisings. He was arrested and expelled from the city. He traveled extensively in southern Russia, Turkey and western Europe, where he attained considerable familiarity with English and German. On his return to Russia he devoted himself to literary pursuits, and he has translated many of the poems of Shelley, Poe, Ibsen and other European writers. In 1894 appeared his first volume of poems, 'Under Northern Skies.' This was followed at intervals of two years by a second and third volume; then in 1904 by a fourth collection, entitled 'Let us be like the Sun.' Many of his lyrics were set to music by the later Russian composers. The Yiddish monthly *Die Zukunft* charged him with having several times changed his political views; but he was regarded as one of the leaders of the modern Russian thought. He wrote many patriotic songs and other lyrics. His rather unsatisfactory "Hymn of Free Russia" (Himn Syobódnoĭ Rossiya), occasioned by the Revolution of 1905 and set to music by Rakhmáninot has carried his name all over the world. This hymn was accepted by the men of the Revolution of 1917. The metre corresponds to the familiar English hymn, "From Greenland's Icy Mountains," and the three stanzas literally translated are as follows:

1. Hail Russia — Free land! — Free Element — Destined to be great!

2. Mighty realm — Boundless ocean! — Glory to those that fought for freedom — That dispelled the mist!

3. Forests, fields and meadows — And steppes and seas! — We are free and happy, — The dawn glows for us all!

4. Same as stanza 1.

Balmont also translated Shelley, Edgar Allen Poe, Ibsen, Hoffmann and Hauptmann, but as an original poet he is reckoned as one of the most notable in recent times.

NATHAN HASKELL DOLE.

**BALMORAL** (băl-mŏr'ąl) **CASTLE,** the favorite Highland residence of the late Queen Victoria, beautifully situated on the south bank of the Dee, 48 miles west of Aberdeen, and in the county of the same name. The site on which it stands is almost completely hemmed in by majestic mountains, and the views from the castle are magnificent. Balmoral was originally a shooting-lodge of the Earl of Fife, but was leased to, and greatly enlarged by, a brother of the Earl of Aberdeen, and in 1848 the reversion of the lease was purchased by Prince Albert. The accommodation furnished by the old building was very inadequate, and accordingly, the property having been purchased in 1852, the present mansion was erected shortly afterward. It underwent some enlargement in 1888. It is built of gray granite, in the Scottish baronial style, and has a massive and imposing appearance in the distance. It consists of two blocks connected by wings, and has a massive tower 80 feet high, with a turret of 20 feet high. The estate, which was the Queen's private property, comprises some 40,000 acres, three-fourths being deer-forest.

**BALNAVES,** băl-năv'ĕs, **Henry,** Scottish reformer: b. Kirkcaldy 1520; d. 1579. He was educated at Saint Andrews, and though at first a Roman Catholic he became a Protestant and made open profession of his faith in 1542; join-

ing the English against Governor Arran. He was accused of connection with the conspiracy to murder Cardinal Beaton, and was declared a traitor and excommunicated. In 1547 he was one of the prisoners taken in the Castle of Saint Andrews and exiled to France, where he wrote his 'Confession of Faith.' Recalled in 1559, he busily engaged in the establishment of the reformed faith, assisted in revising the 'Book of Discipline,' and accompanied Murray to England in connection with Darnley's murder.

**BALNEOLOGY.** See BATHS; HYDROPATHY; HYDROTHERAPY.

**BALSA,** bäl'są, a kind of raft or float, of the nature of a catamaran (q.v.), used on the coasts and rivers of Peru and in other parts of South America for fishing, for landing goods and passengers through a heavy surf and for other purposes where buoyancy is chiefly needed. It is sometimes formed of two inflated hides connected by a sort of platform on which the fisherman, passengers or goods are placed; and sometimes of a very light wood.

**BALSAM** (*Impatiens balsamina*), an East Indian herb of the natural order *Geraniaceæ*, cultivated in gardens for more than 300 years. The plant is an erect free-branching annual sometimes 30 inches tall; bears axillary, diversely tinted yellow, white or red single or often double flowers, the latter of which are called camellia-flowered varieties. The plant is a general favorite of easiest culture.

**BALSAMO, Joseph.** See CAGLIOSTRO.

**BALSAMODENDRON,** bäl-są-mō-den'-drŏn, a genus of trees or bushes of the order *Amyridaceæ*, species of which yield such balsamic or resinous substances as balm of Gilead, bdellium, myrrh, etc. See BALSAMS.

**BALSAMS,** mixtures of resins in volatile oils, the term, however, being popularly applied to any aromatic compound with volatile oils. Balsams are very widely distributed throughout the plant kingdom. They are particularly abundant in the members of the pine family. The araucarias yield a copal that is almost a pure resin; many species of pine yield turpentine and resin; Canada balsam is derived from *Abies balsamea;* the balsam-like sandarach is from a cypress. The *Hamamelis* family gives balsam of styrax and balsam of copaiba is derived from a large number of the legumes and from the *Dipterocarpeæ*. Styrax benzoin is from the *Storax* family. The resins and balsams of commerce are very closely allied. They may be divided into three groups: gum resins, such as asafœtida and ammoniacum; balsams, and resins, such as turpentine, resin, copaiba, mastic, elemi, copal, dammar and sandarach; and the balsams and resins that contain cinnamic or benzoic acids, from which they derive their aromatic odor. It is to this latter group that the word balsam is popularly applied. These are balsam of tolu, balsam of Peru, storax benzoin, dragon's-blood and xanthorrhea resin.

These various bodies are for the most part secreted in special passages in the plants. Sometimes they are formed in the leaves, but for the most part the resinous solution collects in specially designed portions of the stem, usually in the woody portion. It is obtained in a variety of ways from simple incision to boiling chips of the wood with water.

In medicine most of these bodies are active. They are energetic oxidizers,— hence the traditions about ozone and pure air in pine-clad hills, — and several of the hydrocarbons in the volatile oils are stimulating to the skin and mucous membranes, turpentine being an excellent example. It is an excellent external antiseptic, and manifests similar properties on the respiratory, intestinal and genito-urinary tracts. Those resinous or balsamic mixtures containing cinnamic and benzoic acids — notably balsam of tolu (from *Toluifera pereiræ*) and balsam of Peru (from *Toluifera balsamum*) possess similar antiseptic and stimulating properties. They are more powerful in proportion to the aromatic acids contained. Balsam of storax is derived from a tree, *Liquidambar styraciflua*. It has similar properties to the balsam of Peru.

The chrism (see SACRAMENTS) used for consecration and sacramental services should be made of balsam from Syria or Mecca; when this is difficult to obtain, balsams from Brazil or Peru are used.

**BALTA,** bäl'tą, **José,** Peruvian statesman: b. Lima 1816; d. 26 July 1872. He retired from the army with the rank of colonel in 1855; was Minister of War in 1865; one of the leaders in the insurrection which overthrew the unconstitutional President, Prado, in 1868; and was President of Peru, 1868–72. He was murdered in a military mutiny in Lima.

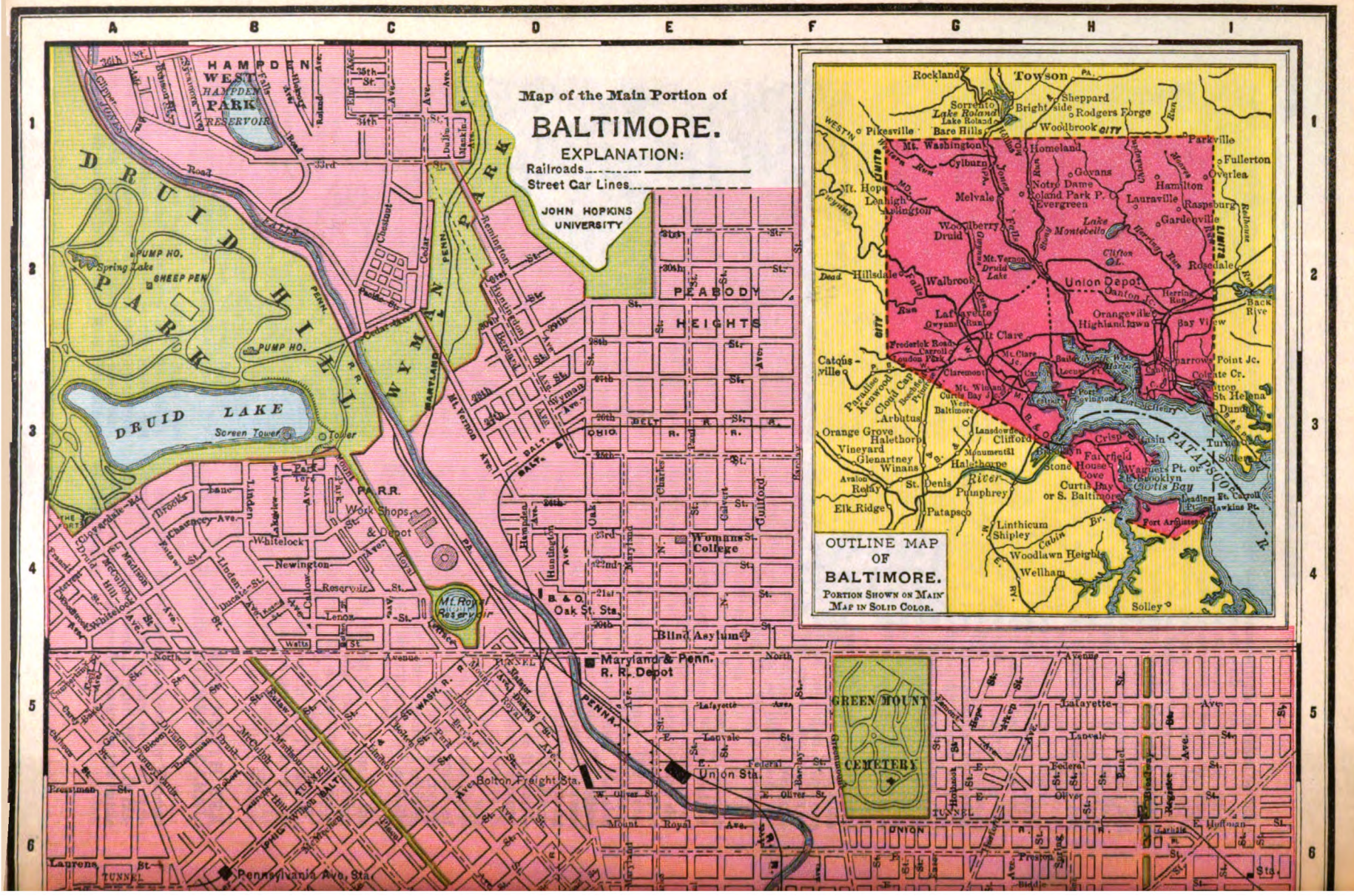
**BALTARD,** bäl-tär, **Louis Pierre,** French architect and engraver: b. Paris, 9 July 1765; d. 22 Jan. 1846. He was appointed architect of the Pantheon and of the Paris prisons, and designed the chapels of the houses of detention of Saint Lazare and Saint Pelagie. The great hall of justice in Lyons, founded in 1834, was devised and almost completed by him. He also acquired fame as an engraver and as the author of many superb works descriptive of monuments and illustrated by his own plates. Among his most notable works in this line are 'Paris and Its Monuments'; 'La Colonne de la Grande Armée'; and illustrations in Denon's 'Egypt.'

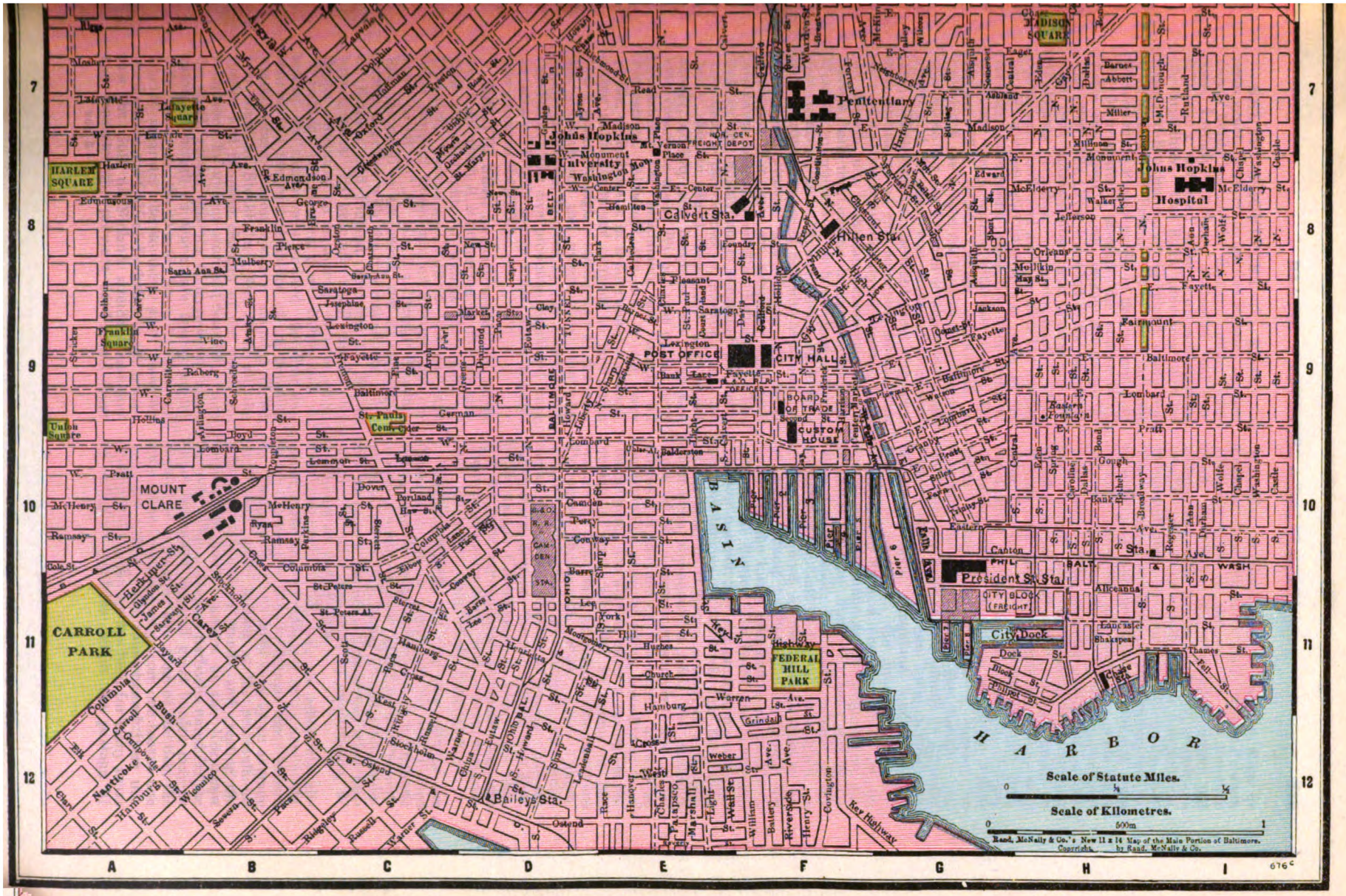
**BALTARD, Victor,** French architect: b. Paris, 19 June 1805; d. 14 Jan. 1874. He was son of Louis Pierre Baltard, and became government architect of France and a member of the Academy of Fine Arts. He built the church of Saint Augustine and other beautiful edifices, and was author of 'Monographie de la Villa Melius' (1847); and other works.

**BALTHAZAR,** bäl-thā'zär, (1) one of the wise men of the East who came to worship Jesus at Bethlehem. (2) A character in Eichberg's opera, 'The Doctor of Alcantara.' (3) Chaucer's name for Belshazzar in 'The Monk's Tale.' (4) The name assumed by Portia in Shakespeare's 'Merchant of Venice'; also the name of minor characters in several of Shakespeare's plays.

**BALTIC** (bâl'tĭc) **AND NORTH SEA CANAL,** or **KAISER WILHELM CANAL.** See CANALS.

**BALTIC, Battle of the,** a poem by Thomas Campbell, celebrating the victory of Lord Nelson over the Danish fleet, 2 April 1801. In history this action is generally known as the battle of Copenhagen.


Map of the Main Portion of
BALTIMORE.
EXPLANATION:
Railroads
Street Car Lines
JOHN HOPKINS UNIVERSITY
HAMPDEN WEST
HAMPDEN PARK
RESERVOIR
DRUID HILL PARK
DRUID LAKE
PUMP HO.
SHEEP PEN
Spring Lake
Screen Tower
Tower
WYMAN PARK
PEABODY HEIGHTS
Mt. Royal Reservoir
Work Shops & Depot
Womans College
Oak St. Sta.
Blind Asylum
Maryland & Penn. R. R. Depot
GREEN MOUNT CEMETERY
Union Sta.
Bolton Freight Sta.
Pennsylvania Ave. Sta.
Towson
Rockland
Sheppard
Rodgers Forge
Woodbrook
Pikesville
Mt. Washington
Homeland
Parkville
Fullerton
Overlea
Govans
Hamilton
Lauraville
Raspsburg
Gardenville
Melvale
Lake Montebello
Druid
Hillsdale
Walbrook
Union Depot
Orangeville
Highlandtown
Bay View
Back Rive
Mt. Clare
Catonsville
Claremont
Mt. Winans
Curtis Bay
Arbutus
Orange Grove
Halethorpe
Vineyard
Glenartney
Winans
Relay
Elk Ridge
Patapsco
Linthicum
Shipley
Woodlawn Heights
Wellham
Solley
Fort Armistead
Sparrows Point Jc.
Colgate Cr.
St. Helena
Dundalk
Turner
Sollers
Crisp
Fairfield
Stone House Cove
Curtis Bay or S. Baltimore
Wagners Pt. or E. Brooklyn
Leading Pt.
Ft. Carroll
Hawkins Pt.
PATAPSCO R.
OUTLINE MAP OF BALTIMORE.
PORTION SHOWN ON MAIN MAP IN SOLID COLOR.



Penitentiary
Johns Hopkins University
Johns Hopkins Hospital
Calvert Sta.
Hillen Sta.
POST OFFICE
CITY HALL
CUSTOM HOUSE
BOARD OF TRADE
MOUNT CLARE
CARROLL PARK
FEDERAL HILL PARK
BASIN
HARBOR
City Dock
President St. Sta.
Bailey's Sta.
HARLEM SQUARE
Franklin Square
Union Square
Lafayette Square
MADISON SQUARE
Scale of Statute Miles.
Scale of Kilometres.
Rand, McNally & Co.'s New 11 x 14 Map of the Main Portion of Baltimore.
Copyright by Rand, McNally & Co.
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**BALTIC PROVINCES** (in Russia), a term generally given to the five Russian governments bordering on the Baltic, namely, Courland, Livonia, Esthonia, Petrograd and Finland; in a restricted sense it often designates the first three. The Baltic provinces once belonged to Sweden, except Courland, which was a dependency of Poland. They came into the possession of Russia partly in the beginning of the 18th century, through the conquests of Peter the Great, partly under Alexander in 1809. Peter the Great conceded to the provinces their own administration and guaranteed the inhabitants freedom of conscience. These rights were confirmed anew in 1856, but in spite of this a systematic attempt was made by the Russian government, especially since 1880, to assimilate the provinces with the rest of the empire. The Greek Church endeavored to proselytize the people, the Russian language was substituted for the German in the schools and courts and the press was subjected to censorship. These measures aroused great discontent and the autumn of 1905 witnessed the outbreak of a formidable revolutionary movement among the Lettish and Esthonian peasantry, directed against both the German landowners and the Russian government. A borderland between the Germanic and Slavonic areas, they have been a frequent cause of difficulty between Germany and Russia, and during the great European War were the scene of many land and naval conflicts (see WAR, EUROPEAN). The bulk of the population is composed of Esths and Letts — the former a Finnish race, the latter akin to the Lithuanians. The higher classes, nobility and burghers, are Germans, who constitute about 7½ per cent of the total population. The inhabitants are nearly all Protestants. Although the soil is not very fertile, agriculture is in a flourishing condition, owing to the improved methods of cultivation and a generally higher intelligence of the people. Commerce and manufactures are also highly developed, favored by the proximity of the Baltic. The five provinces combined have an area of 191,526 square miles, and a population of about 9,427,000.

**BALTIC SEA**, an enclosure of the North Sea with which it is connected by the Skagerrack and Kattegat. It washes the coasts of Denmark, Germany, Courland, Livonia and other parts of Russia and of Sweden, and extends to lat. 65° 30′ N. It is nearly 930 miles long, from 50 to 425 broad, and its superficial extent, together with the contents of the gulfs of Bothnia and Finland, amounts to 160,000 square miles. Its generally small breadth; its depth, amounting on an average to from 40 to 50 fathoms, but in many places hardly half so much; its shallowness toward the Prussian shores, and the rugged nature of the Swedish coasts, where deepest water is sounded (1,542 feet south of Stockholm); but above all, the sudden and frequent changes of the wind, accompanied by violent storms (especially from the east), render this sea dangerous for navigators, although its waves are less powerful than those of the North Sea. A chain of islands separates the southern part from the northern, or the Gulf of Bothnia. In the northeast the Gulf of Finland stretches eastward and separates the province of Finland from Esthonia. A third gulf is that of Riga or Livonia. The Kurisches Haff and the Frisches Haff are inlets or lagoons on the Prussian coast. The water of the Baltic is colder and clearer than that of the ocean; it contains a smaller proportion of salt, and ice obstructs the navigation three or four months in the year. The ebb and flow of the tide are inconsiderable, as is the case in other inland seas, the difference between high-water and low-water mark being only about a foot; yet the water rises and falls from time to time, probably owing to the varying rainfall and evaporation. In stormy weather amber is often found on the coasts of Prussia and Courland, which the waves wash upon the shore. It forms the drainage basis for a great part of northern Europe. Among rivers that empty into it are the Neva, Dwina, Oder, Vistula, Niemen and a number of Swedish rivers. Between the Kattegat and Baltic are the large Danish islands Zealand and Funen; others in the sea itself are Samsoe, Moen, Bornholm, Langeland, Laaland, which belong to Denmark; the Swedish islands — Gottland and Oeland (besides Hveen in the sound, with the ruins of Oranienburg, the observatory built by Tycho Brahe); Rügen, belonging to Prussia; the Aland Islands at the entrance of the Gulf of Bothnia, and Dagoe, together with Oesel, on the coast of Livonia, all of which belong to Russia. The Sound, the Great and the Little Belt lead from the Kattegat into the Baltic. The Baltic and North Sea are now connected by the great ship canal constructed between Brunsbüttel, near the mouth of the Elbe, to Holtenan, near Kiel, a distance of 61 miles, and opened in 1895. The canal is a work of the German government, and is intended for the use of war-vessels as well as trading-ships, many of which, bound to or from Baltic ports, are able to effect a saving on the voyage of over 500 miles by means of this waterway. The chief seaports of the Baltic are Petrograd, Kronstadt, Riga, Revel, Narva, Libau, Helsingfors, in Russia; Stockholm, Gefle, Karlskrona, Malmo, in Sweden; Memel, Königsberg, Danzig, Stettin, Lübeck and Kiel, in Germany; Copenhagen, in Denmark. During the great international European War, the Baltic Sea was an active field of naval and military operations. See WAR, EUROPEAN.

**BALTIMORE**, Md., the chief city of the State, the 7th in population of the United States, and the commercial head of the Atlantic seaboard south of New York; on the Pennsylvania (P., B. & W.), Baltimore and Ohio, Western Maryland, Northern Central and other railroads; 38 miles northeast of Washington, 97 southwest of Philadelphia.

**Topography.** — The city is admirably situated at the head of tidewater on an arm of the great Chesapeake Bay, in former times known as "Patapsco Bay," 12 miles long by an average of 3 miles wide, forking at the peninsula on which Fort McHenry stands, and creating the land-locked harbor known as the Northwest Branch. This celebrated harbor is noted for the ease with which ships of great burden may be docked or moored at any stage of the tide, the tidal movement being only from one foot to one foot six inches. The ship channel from this inner harbor to the sea has been for many years of sufficient depth to permit the passage of

ships drawing 35 feet of water and over to the docks and elevators of the Baltimore and Ohio Railroad on the southern side as you enter, and the Pennsylvania Railroad system on the eastern side of the harbor. South of the above mentioned peninsula is another wide fork of the greater harbor, known as the Middle Branch, on which are located the great terminals of the Western Maryland Railroad; this again forks, receiving the waters of the small Patapsco River and Gwynn's Falls, on either hand. Through the centre of the city flows a stream which, rising some distance north of the inner harbor, has its fountain-head at springs which flow 500,000 gallons per day. It is known as "Jones Falls," after David Jones, who built himself a house on its banks about 1680. On its banks are located the union station of the Pennsylvania Railroad Company, whose grounds bordering on the stream are embellished with tasteful gardens, and the city has beautified the other shore by constructing "sunken" gardens. The land area of the city in 1888 was 13,202 acres, of property annexed in 1888 was 16,939 acres, of the harbor 1,507 acres, making the total area of the present city 31,648 acres.

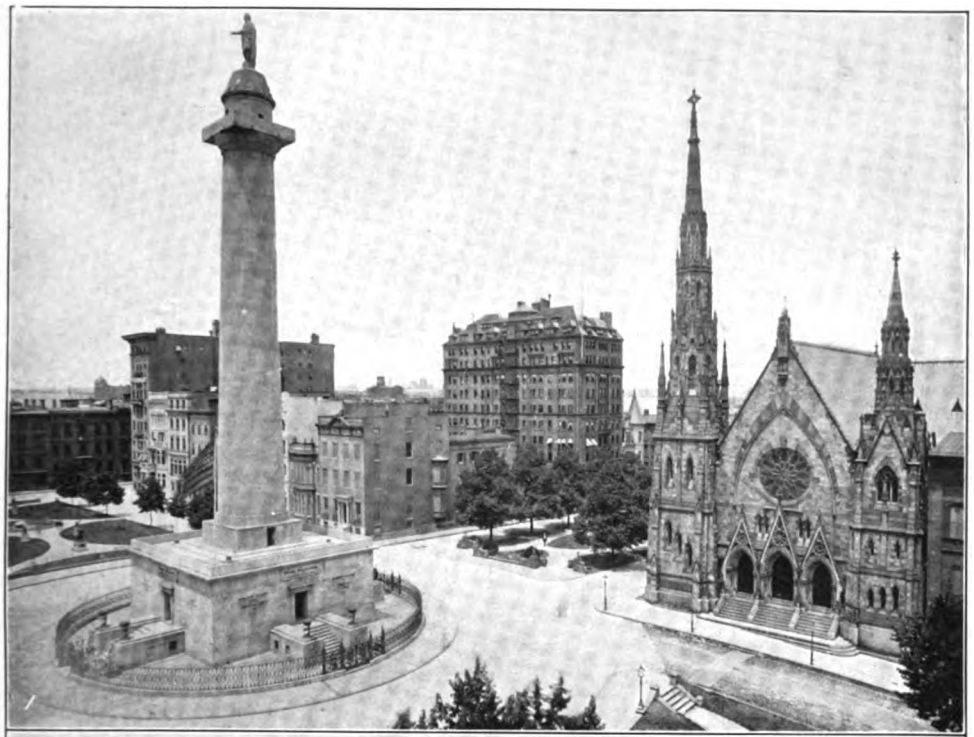
**Transportation.**— Baltimore has a very modern and excellent street car service; it can boast of the fact that it had the first electric street railway and the first electric elevated railway in the world. The street railways have 404.5 miles of rails now being operated on the streets and suburban points within the radius of its operations. The Delaware and Chesapeake Ship Canal, across the narrow strip of Delaware, gives it a direct water outlet to Philadelphia. The Baltimore and Ohio Railroad system (q.v.) follows almost without change the route of the old national pike, which extended from Baltimore to Saint Louis; it was the first road to the Atlantic seacoast and the cornerstone was laid 4 July 1828. The facilities provided by this road are the great terminals located at Locust Point, consisting of freight sheds, elevators, and the proper loading docks with a water depth of 35 feet, connecting with the ship channel to the sea of the same depth. Within recent years an immigration pier and necessary buildings have been erected.

The terminals of the Pennsylvania Railroad are on the eastern or opposite side of the harbor from the Baltimore and Ohio terminals. They have the same depth of water in the freight slips and have direct communication with the 35-foot channel. The principal road of this system passing through this city is the Philadelphia, Baltimore and Washington Railroad, and its branches. Running a little west of south from this city is still another important feeder, the old Baltimore and Potomac Railroad, so called prior to recent consolidation, which passes through Washington, terminates at Quantico, Va., branching at Bowie, Md. The Merchants and Manufacturers' Association had much to do with the introduction of another great railway system into this city, in the matter of the sale of the city's interest in the Western Maryland Railroad to what was known as the "Fuller Syndicate" together with the purchase of the Pittsburgh and West Virginia Central and the acquisition of the Wabash system. The Baltimore and Potomac has a tunnel 7,400 feet long through the west side of the city; the Northern Central one 3,500 feet long through the northeast; the Baltimore and Ohio one 1⅓ miles long through the city north to south. The Baltimore and Ohio road draws its trains through by electric motors. Seventeen foreign steamship lines use the docks and piers of the Baltimore and Ohio Railroad or the Pennsylvania Railroad Company. These lines run to Europe and South America and other ports. Besides these there are steamship lines to Boston, Providence, New York, Wilmington, N. C., Charleston, Savannah, New Orleans, etc.; and steamboat lines to Philadelphia, Washington, Norfolk, Richmond, Georgetown, Chester, Galveston, Jacksonville, Havana, Cuba, and to points on the Chesapeake Bay and its tributaries.

**Shipping, Commerce, Manufactures, Trade.**— At the port of Baltimore 31 Dec. 1914, in the coastwise trade for the district of Maryland, 1,939 vessels were documented in a recent year. This includes Crisfield, Annapolis, Washington, D. C., and Alexandria, Va.— more than the number of vessels documented at any other Atlantic seaport, except New York. In addition to these vessels, nearly all the vessels documented at Virginia and North Carolina ports trade on the Chesapeake Bay, making a total (estimated by the collector of the port of Baltimore) of about 4,000 documented vessels trading on the Chesapeake Bay. Most of these vessels, of course, trade at Baltimore. Baltimore has 18 miles of water front suitable for docking purposes (including 6¾ miles in the main inner harbor, 3½ miles on the Middle Branch within technical city limits, and at least 8 miles more adjacent to the city limits). It has 160 wharves in the main harbor, with 145,700 feet — say 27¾ miles — of frontage of wharf room. Adding this amount of wharf frontage to the other water front of the Patapsco River and its tributaries, the total is 120 miles of water front, developed and undeveloped. Of this wharfage the city owns 13 piers, with a wharf frontage of 26,385 feet — five miles. Baltimore has spent $6,161,000 on municipal docks, and has available $5,000,000 more for extending the system. Baltimore's business operations aggregate more than $1,000,000,000, manufactures leading. Total annual value of manufactures, shown by figures assembled recently, exceeds $400,000,000. The largest single interest is clothing at $44,500,000. Copper, tin and sheet iron products come next at $32,000,000. Fertilizer, which is fourth, shows the largest rate of increase. The total is now $16,000,000. Baltimore stands first in the manufacture of cotton duck, straw hats, men's clothing, fertilizers, copper, tin and sheet iron products, canning and preserving oysters, and as a banana market.

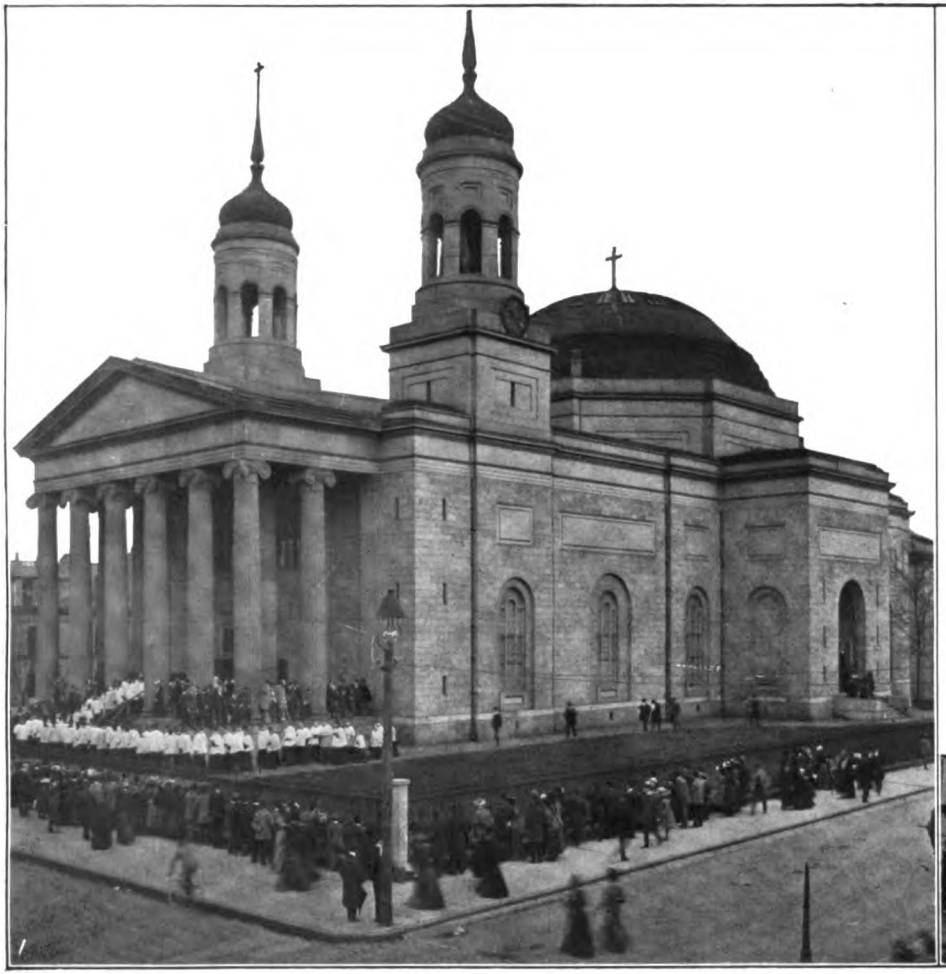
There are over a thousand wholesale and jobbing houses in Baltimore. Two hundred of these firms carry over 300,000 accounts in the South alone. A fair minimum estimate of the amount of Baltimore capital invested in Southern States below the Potomac is $200,000,000. Baltimore's jobbing trade, not including the commission business, reaches $250,000,000. The leading items are dry goods and notions, millinery, clothing, boots and shoes, hats and caps,

## BALTIMORE



1 Washington Monument

2 Johns Hopkins Hospital



1 Cathedral

2 Battle Monument

drugs, groceries and food products, all of which show large increases over 1910. In addition to the annual jobbing trade of $250,000,000 are the grain trade and shipping figures of over $100,000,000 and the commission business of over $100,000,000. The average freight received and distributed at Baltimore by railroad and boat lines annually is over 48,000,000 tons. Baltimore's receipts in a recent year were 90,171,602 bushels of grain and 1,808,672 barrels of flour, which, together with hay, straw and mill feed handled, aggregated 72,423 tons. Baltimore's imports for a calendar year were $38,941,666; exports, $308,975,629. Baltimore's banking resources are $296,858,616, not including bonding or credit companies. Baltimore's annual bank clearings are $2,206,338,952. Its national bank deposits in 10 years increased 47.9 per cent. The bank clearings in 10 years increased 72 per cent. Post-office receipts annually aggregate $2,-993,388.

**Modern Improvements.**— In 1904 Baltimore had a fire which up to that time, with the exception of the big Chicago fire, was the most destructive conflagration that ever visited an American city. It destroyed most of the business district, burned over 140 acres of business block and entailed a loss of $125,000,000 or practically one-fifth of the wealth of the community. At first the blow was staggering, but the people responded to the situation with great courage and went so far as to decline the hundreds of thousands of dollars offered, much of it in actual cash, that poured in from other cities. Baltimore's citizens decided over night not only to rebuild but to take their losses and do their construction on their own resources.

Until that time the growth of the city had been along conservative lines. A sentimental as well as an actual connection with the great Southern trade gave it a constant and substantial increase and made its development steady and assured. But the fire stirred it as it had never been affected before and all at once the fine enterprise and broad ideas of its people found an awakening. A Burnt District Commission was created, and to this Commission were entrusted extensive and almost autocratic powers. The results were wider streets with reduced grades, the wonderful dock system and improvements of similar kinds that under normal conditions could not have been secured in half a century. After 12 years, practically every trace of the fire had been obliterated. The business district has risen from its ashes into what the building inspectors pronounce the best built and most substantial business section that can be found in any city in America. Baltimore to-day presents a unique superiority in its equipment for the handling of the great business which has been coming to it in constantly increasing volume, while as a city of homes Baltimore has always enjoyed the most enviable reputation. Confined by no limits, her expansion has widened the area of her private residences without increasing the difficulties of business, but facilitating them by modern and up-to-date street car and motor bus systems.

**Public Buildings.**— First in municipal importance, though possibly not in the cost or beauty of design, is the city hall, built of Maryland white marble, the style of architecture being the Renaissance. Cost of construction, $2,271,135.64; cost of furnishing, $104,264.79. The new courthouse is 200 feet front by 325 feet depth. The material is white Maryland marble, and the architectural style is a free Renaissance treatment of the Ionic order. The cost of this building completed was $2,753,-003.18. The post-office, located opposite the courthouse is also a recent erection, Italian in general treatment. The building contains the United States and District Courts. The cost was $2,011,835. The custom-house cost over $1,500,000, the style of architecture is Classic and was built of Maryland granite.

**Educational Institutions, Art Galleries, Libraries, etc.**— The Maryland Institute of Art and Design, which was for many years in the heart of the commercial centre of the city, was incorporated in 1826. The library contains 20,000 volumes relating to the arts and sciences. The new home of this school is located on Mount Royal avenue. It has been most liberally endowed by the Jenkins family of Baltimore and Andrew Carnegie. The Academy of Sciences, located in the fine old mansion of ex-Governor and ex-Senator Thomas Swann, on West Franklin street, contains a large collection of the bird life of this country, and a large collection of Indian remains. The Peabody Institute, a white marble building standing within the shadow of the Washington monument, is a donation from the philanthropist, George Peabody (q.v.). It contains a large reference library, an academy of music and a gallery of art. The entire building is 170 by 150 feet. The library room accommodates about 300,000 volumes. The Walters Art Gallery, located within 100 yards of the last named institution, contains the finest private collection of paintings and ceramics in the United States, and also a special collection of ancient arms and armor and lacquer work of the Japanese. In the same block, southeast of the original gallery and on the corner of Centre street and Washington Place, there has been erected an art gallery for the Walters Collection of Old Masters, purchased by Mr. Henry Walters, at a cost of $1,000,000. The Enoch Pratt Free Libraries, of which the city has 17, were the free gift of Enoch Pratt (q.v.). The central library is located on West Mulberry street near the centre of the city. It has 16 branch libraries. Other libraries are the Maryland Historical, the Peabody reference library, those of the Maryland Institute, the Maryland Episcopal Diocese, the Bar Association, the Archbishop's, Odd Fellows, New Mercantile, Baltimore and Ohio Employees' Free Circulating and others.

The history of Baltimore's development in other than material and industrial affairs has been most remarkable in the educational field. Baltimore is to-day one of the greatest educational centres of the country. The Johns Hopkins University (q.v.) has attained the front rank among the higher institutions of learning. Goucher College has made Baltimore the centre for collegiate instruction of women.

The old Johns Hopkins University made no pretensions in the way of architecture. The new home of this great school leaves nothing to be desired. Placed at an elevation of some 300 feet and occupying the estate of one of the Carroll family, known as "Homewood Park,"

it overlooks the city and harbor. On North Broadway, facing the west, stands the group of buildings of the Johns Hopkins Hospital. The architectural appearance of the central group of buildings is majestic, standing 114 feet above tide. The cost of the original buildings was $2,250,000, which has been very largely added to since the founding. Other medical schools are those of the University of Maryland (1807), and the Baltimore Medical College. The oldest dental college in the world is the Baltimore College of Dentistry and Surgery, chartered 1839. The chief law school is that of the University of Maryland.

The Woman's College (Methodist Episcopal, 1888) now known as Goucher College, is another institution of which the citizens are proud. The buildings are throughout in the Romanesque style, of the Lombard variety, with adaptations from that order to which Vitruvius gave the name Tuscan. They are built of dark undressed granite and are surmounted by roofs of Roman-red tiles. The church is the most southern member of the group of buildings, its massive tower the most conspicuous object in the northern part of the city. This tower is almost an exact counterpart of a campanile to be seen just outside of the city of Ravenna, Italy. There are also many other colleges and preparatory schools of good rank, making the city a leading educational centre. Among these are Morgan College (Methodist Episcopal, 1876); Baltimore City College; Bryn Mawr School (1885); Baltimore Polytechnic Institute, and four Roman Catholic institutions — Saint Mary's (Seminary of Saint Sulpice, 1791); Loyola (1852), under Jesuit management; Notre Dame of Maryland (1873); Saint Joseph's (1888). The public school system has 108 schools, 2,064 teachers, and 84,000 pupils, and about $2,000,000 is annually expended in its support. The first manual-training schools for white or colored pupils were established here. There is also a State Normal School and an institution for training colored teachers.

**Clubs.**— Baltimore cannot be called a club city; however, the time-honored Maryland Club is a great social organization occupying a superb new building on Charles and Eager streets. There are also the younger Baltimore Club, on Charles street, opposite, composed largely of the sons of members of the Maryland Club; the University Club; the Catholic Club; the Charcoal Club; Baltimore Athletic Club; Automobile Club; Germania Club, for German merchants; the Merchants' Club; and the Phœnix Club and Clover Club, both Jewish organizations.

**Charitable Institutions.**— The city has a body of gentlemen, known as supervisors of city charities, who serve without pay, and who look into every form of charity and direct to a large extent its distribution. There is also a State board of charities, non-paid. Among the institutions to aid suffering humanity are Johns Hopkins Hospital (already mentioned); Maryland Hospital for the Insane; Female House of Refuge; Springfield State Hospital; House of Refuge (male); Aged Men's Home; All Saints Home for Children; Augusburg Home; Baltimore Association for the Improvement of the Condition of the Children of the Poor; Baltimore Orphan Asylum (more than 100 years old); Boys' Home Society; Briska Help Association; Charity Organization Society; Christian Tribune Home for Young Ladies; Dolan Children's Aid Society; Egenton Female Orphan Asylum and School; Female Christian Home; and Free Summer Excursion Society. The various charitable institutions are too numerous to mention all by name, but among them are the blind asylum, a fine white marble building; and the city almshouse, accommodating 1,300 inmates.

**Churches.**— There are some 489 church buildings in the city, many of great beauty both externally and internally; notably the First Presbyterian Church on Madison street, with its wonderful Gothic spire 300 feet high; the Mount Vernon Methodist Episcopal Church within the shadow of the Washington monument, and the Roman Catholic Cathedral commenced in 1800. The style and decorations of the last named are of the Grecian-Ionic order. The great dome is 207 feet in circumference internally, and 231 feet externally. The side aisles in the church are terminated by two pictures. That on the right is the "Descent from the Cross," painted by Pauline Guerin — a present from Louis XVI to the archbishop — and that on the left, "Saint Louis Burying His Officers and Soldiers Slain Before Acre," the work of Steuben and presented by King Charles X of France. There are also the stately Methodist church described with the Goucher College; the beautiful white marble synagogue, Oheb Shalom, on Eutaw Place, oriental in style, and a short distance away the great Har Sinai temple on Bolton street, and the Byzantine temple on Madison avenue. The Episcopalians have many fine churches, among them Saint Paul's on Charles street and Grace Church on Monument street. The initial work on the Episcopal Cathedral, Saint Paul and University Parkway, has been completed and the Pro-Cathedral is in use. The following is a list of the churches of the various denominations: Baptist, 59; Christian Science, 2; Congregational, 4; Disciples of Christ, 7; Evangelical Association, 4; Evangelical Lutheran, 57; Friends, 2; Orthodox, 2; Independent Roman Catholics, 1; Independent German, 1; Jewish synagogues, 22; Methodists of various kinds and color, 119; New Jerusalem, 1; Ark of the Covenant, 1; Presbyterian, 33; Protestant Episcopal, 45; Reformed Church, 14; Reformed Episcopal, 3; Roman Catholic, 55; Seventh Day Adventists, 2; Swedenborgian, 3; Union Evangelical, 3; Unitarian, 1; United Brethren in Christ, 7; Universalist, 1.

**Monuments and Statues.**— The first monument erected in Baltimore was in memory of Christopher Columbus and was dedicated 12 Oct. 1792, the 300th anniversary of his landing. It stands in the grounds of the Ready Asylum on North avenue. One of the grandest monuments in the world stands at the intersection of Mount Vernon and Monument squares — the Washington monument, the erection of which was conceived in the year 1809, the design furnished by Robert Mills, and the cornerstone laid on 4 July 1815. It rises above these squares about 200 feet and is of the Greek Doric inspiration. The erection of this monument, the first to be erected by any city in memory of Washington, is what gave Baltimore her designation as "The Monumental

City.» The figure of Washington is by Causici. The next in importance is the «Baltimore Monument,» known as the «Battle Monument.» It was erected to the memory of those who fell at the battle of North Point in 1814 and is the work of Maximilian Godefroy. It is 52½ feet high. The principal column represents a fasces upon the bands of which are placed in bronze letters the names of those who fell, the whole being crowned by a female representing the city, holding in her hand a wreath of laurels, capellano. The Thomas Wildey monument on North Broadway is dedicated to him as the founder of the Order of Odd Fellows and may be described as a Grecian Doric column 52 feet high, on which stands a figure of Charity. Other monuments are the Wells and McComas monument at Ashland square; that on Federal Hill erected to the gallant soldier Armistead, who defended Fort McHenry at the same time, 1814; the new Armistead monument at Fort McHenry; and the Francis Scott Key monument at Eutaw Place and Louvale street; the monument to the Marylanders who fell in Mexico, located in Mount Royal avenue; the monument at the intersection of Mount Royal avenue and Cathedral street, recording the deeds of the Maryland Line, the only troops who fought from Bunker Hill to Savannah during the Revolution; and the monument, by Ruckstuhl, erected by the Daughters of the Confederacy, to the Confederate soldiers of the State. Mr. William T. Walters has given the city the famous bronzes of Barye, including the great lion and the masterful bronze by Dubois, «Military Courage»; the sitting statue of Chief Justice of the United States, Roger Brooke Taney (q.v.) in his official robes; and the equestrian statue of John Eager Howard (q.v.).

**Parks and Streets.**— The beautiful Druid Hill Park consists of 674.16 acres. Other parks are Clifton Park, 267.26 acres; Clifton Lake, 44 acres; Patterson Park, 128.44 acres; Carroll Park, 176.44 acres; Riverside Park, 17.02 acres; Federal Hill Park, 8.02 acres; Wyman Park, 198.39 acres; Swann Park, 11.31 acres; Latrobe Park, 13.80 acres; Gwynn's Falls, 374.19 acres; Venable Park, 60.81 acres; New Reservoir Park, 92.65 acres; Herring Run Park, 164.61 acres, besides 32 small squares dispersed all over the city, making a grand total of about 2,277.34 acres. In natural beauty Druid Hill Park is unsurpassed by any in the world. It is filled with springs of pure water, some of which are medicinal. A great artificial lake, a part of the city's waterworks, with a depth of more than 80 feet, occupies many acres and around it has been constructed a fine drive. Near the head of this lake on the driveway stands the colossal statue of the Scottish hero, Sir William Wallace. In the rear of this is the full-length marble statue of Washington, executed by Bartholomew. A short distance from the latter is a costly and graceful pedestal surmounted by a life-size figure of Christopher Columbus by Achille Canessa. Patterson Park, on the eastern rim of the city, contains 128.44 acres, overlooks the harbor and still retains some of the earthworks thrown up by the American army in the defense of the city 1812–14, some of the guns being still in position. Necessarily a city is judged by what it does to advance its own facilities. According to this standard, Baltimore stands out conspicuously. Within the past few years engineers and municipal experts from every point of the world have been visiting the city to inspect its new sewerage. This system is the finest ever attempted and cost in the neighborhood of $25,000,000. Many Baltimoreans think their largest gain from the fire was the new dock system. Previous to the fire the city owned very little wharf property. Since the fire the municipality has acquired all of the harbor front burned in the fire and it has been erecting the best system of docks that can be found along the Atlantic coast. The development of its suburbs includes Roland Park and Builford, pronounced by experts to be the finest examples of suburban development in the world. Baltimore's assessable basis for taxation grew from $402,816,097 in 1901 to $915,433,444 in 1914, an increase of $512,617,247. The total mileage of streets and alleys in the city is 581.93, of which 324 miles are paved with the most modern improved paving, and all cobblestone paving is being replaced by the same.

**Water and Fire Departments.**— The city owns its waterworks system, which is self-sustaining — 777 miles of water mains in the city. The water supply has its source in the Gunpowder River, average daily flow 413,338,092 gallons. The service has two impounding reservoirs — Lock Raven on the Gunpowder River, capacity 2,270,000,000 gallons, and Lake Roland in the bed of Jones' Falls, capacity 200,000,000 gallons. The department has two stand pipes with a maximum capacity of 530,000 gallons. It has a magnificent filtration system. The expenses of the fire department are about $1,145,114 per annum. Equipment — 40 engine companies, 19 truck companies, 2 hose companies, 2 water tower companies, and 2 fireboats. In the business district, Baltimore has one of the best high-pressure water systems to be found in America.

**Government.**— The charter provides that «the executive power of the mayor and city council of Baltimore shall be vested in the mayor, the departments, sub-departments and municipal officers not embraced in a department herein provided for, and such special commissioners or boards as may hereafter be provided for by laws, or ordinances not inconsistent with this article.» The mayor holds office for four years; he has a veto which can be overridden by a three-fourths vote of the council, which is composed of two branches; the lower of 24 members, one from each ward; the upper of nine members, each from two contiguous wards. The bulk of the city officers are appointed by the mayor with the consent of the higher branch. The council has the right to appoint the city register and public printer; and the comptroller and surveyor are elected by popular vote. The principal city officials are the comptroller (head of department of finance); city register; board of estimates; commissioners of finance; city collector; collector of water rents and licenses. The chief departments are public safety (fire, health, buildings and street cleaning), public improvements, parks and squares, education, charities and corrections and review and assessments.

**Population.**— The city stands seventh in population among the cities of the United States the growth being as follows: (1775) 5,934; (1790, first United States census) 15,530; (1800) 26,514; (1810) 46,454; (1820) 62,738; (1830) 80,620; (1840) 102,513; (1850) 169,054; (1860) 212,418; (1870) 262,854; (1880) 332,313; (1890) 434,439; (1900) 508,957; (1910) 558,485; (1917) 600,000. The figures would be further increased if the two cities on the eastern boundary, now separated only by a curb line, could be added. They have fully 100,000 inhabitants, but while practically part of Baltimore, they do not add to its population.

**History.**— The first settlement of land included in the present site of Baltimore was made in 1662. Charles II was King of England and Charles Calvert governor of the province. The English people had been making history very fast and among their most brilliant achievements was the planting of successful colonies in various parts of the world, notably the Virginia colony, the Massachusetts plantations and the province of Maryland, founded in 1534. So that the first actual settlement on land within the present city limits was made only 28 years after the landing of the first colonists at Saint Mary's. During the 17th century we find statute books burdened with many laws creating town after town on paper, as many as 33 having been created, three of them being within the boundary of what was then called Baltimore County. By the act of the general assembly of 1706 a town was to be established on Whetstone Neck or the Patapsco River. No name was given to the town in the act. Another town, called Baltimore, was located near the mouth of the Bush River on its eastern side. This town is shown in the map made by Augustus Herrman, the Bohemian, in 1670, and some 14 years after the actual founding of the present city the general assembly ordered another Baltimore to be laid out on Indian River in Worcester County. Nothing was ever done in regard to this last town, the county surveyor refusing to proceed with the work.

Then came the true founding of the city of Baltimore by the passage of an act entitled "An act for erecting a town on the north side of Patapsco, in Baltimore county, and for laying out in lots of 60 acres of land in and about the place where one John Flemming now lives." (1729, chap. 12). About two years after the founding of Baltimore town an act was passed entitled "An act for erecting a town on a creek, divided on the east from the town lately laid out in Baltimore county, called 'Baltimore Town,' on the land whereon Edward Fell keeps a store." (1732, chap. 14). The next step for the enlargement of the original town was the passage by the general assembly of the Act of 1745 (chap. 9), 15 years after the founding. This act was passed on the joint petition of the inhabitants of Baltimore and Jones' Town, that the two towns be incorporated into one entire town and for the future be called and known by the name Baltimore Town and by no other name. The town was again enlarged two years later by the Act of 1747 (chap. 21), on petition of the inhabitants by the addition of 18 acres, which were not included in Jones' Town nor in Baltimore Town. In 1765 another addition to the town was made on petition of Cornelius Howard and other persons, consisting of 35 acres on the west and south sides of the town. The town was again enlarged by the Act of June 1773 by the addition of 80 acres on the east and southeast.

The Revolution brought it prosperity by crippling its rivals and it was a great seat of privateering. For about two months in 1776–77 Congress held session in one of its taverns, having fled from Philadelphia in fear of the English. About this period the energy and resources of a couple of immigrant Scotch-Irishmen, the brothers John and Henry Stevenson, began to push the place forward; new stage and packet lines were established, the roads improved and turnpikes laid out and Jones' Falls diked and part of its course filled in. The European wars of the French Revolution and later threw a large part of the world's carrying-trade, till Napoleon's downfall, into American hands; the "Baltimore clippers" were famous everywhere. In 1792 a large body of French refugees from Haiti came in. On 31 Dec. 1796, the old settlement of Fell's Point was united with it and it received a city charter, it having previously been governed from Annapolis. In the War of 1812 it again became a seat of privateers, in revenge for which the British attempted its capture in 1814, but the attack was repulsed 12 September. To it we owe the "Star-Spangled Banner" (see KEY, FRANCIS SCOTT) and the Battle Monument. The end of the Napoleonic wars in 1815, restoring to England her old carrying-trade, was a heavy blow to Baltimore. In 1828 the public-school system was established. In 1860 all three anti-Republican parties held their national conventions there; and on the outbreak of the Civil War the Union troops passing through there were mobbed by the citizens and the first blood of the war was shed in its streets, 19 April 1861. On 23 May Federal Hill was occupied by a Union force and the city remained under martial law till the end of the war. The convention of 1864, which renominated Lincoln, was held here. In 1888 "The Annex" was annexed to the city, extending its limits two miles north and west and nearly doubling its size. Since 1890 Walbrook has also been annexed.

The National Democratic Convention of 1912, which nominated Wilson and Marshall for President and Vice-President, was held in Baltimore. The first mercantile submarine to cross the Atlantic Ocean — a German boat carrying a cargo of merchandise — evaded the British and French blockade during the great European War, and entered the port of Baltimore 9 July 1916. See DEUTSCHLAND. Consult. Love, 'Baltimore: The Old Town and the Modern City' (Baltimore 1895); Thomas, 'The City Government of Baltimore' (in 'Johns Hopkins University Studies,' 1896).

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**BALTIMORE, Barons of, or LORDS BALTIMORE.** See BALTIMORE FAMILY; COLONIAL GOVERNMENT, PROPRIETARY.

**BALTIMORE, Md., Attack on** (War of 1812). When the British had burned Washington they reembarked on their ships and sailed for the mouth of the Patapsco to at-

tack Baltimore. The approach to the city by water was defended by Fort McHenry with a garrison of 1,000 troops under Lieut.-Col. George Armistead, and to the right of the fort two batteries (Fort Covington and City Battery) were erected to prevent an attack from the rear. The total number of troops in Baltimore was 13,888 officers and men under the supreme command of Senator Samuel Smith (q.v.), whereas the British numbered not more than 5,000. On 12 Sept. 1814 General Ross began the march toward the city while the fleet sailed to attack the forts, but on striking the American advance of 3,200 troops under Brig.-Gen. John Stricker, Ross was killed, Col. Arthur Broke succeeding to the command. A hot battle then ensued but after a gallant resistance Stricker retired with a loss of 24 killed, 139 wounded and 50 prisoners, whereas the British lost 46 killed and 273 wounded. On 13 September Broke resumed the march, but on viewing the American defenses decided to wait until the fleet had silenced the forts. About sunrise of the 13th five bomb vessels began to bombard Fort McHenry from a distance of two miles. The heavier British ships could not approach within range owing to the shallowness of the river and those of the lighter ships that did approach were driven off quickly. During the day and following night 1,500 shells were thrown into the fort with comparatively little injury and the loss of only four men killed and 24 wounded. Accordingly Admiral Cochrane and Colonel Broke decided the capture of the town would be too costly and retreated to the lower Chesapeake. On 19 September Cochrane sailed for Halifax and on 14 October the troops were transported to Jamaica, later to participate in the battle of New Orleans. Francis Scott Key witnessed the bombardment from the British admiral's ship, whither he had gone to obtain the release of some friends, and when at dawn he saw the flag still floating over the fort he wrote 'The Star-Spangled Banner.' Consult 'American State Papers, Military Affairs' (Vol. I, p. 591); Adams, Henry, 'The United States' (Vol. VIII, pp. 166–73); Brackenridge. H. M., 'History of the Late War' (pp. 265–73); Glieg, G. R., 'Campaigns of the British Army at Washington and New Orleans' (pp. 170–98); James, William, 'Military Occurrences' (Vol. II, pp. 308–24); Lossing, 'War of 1812' (pp. 949–57); Scharf, J. T., 'History of Maryland' (Vol. III, pp. 99–137); Wiley and Rines, 'The United States' (Vol. IV, pp. 33–36).

**BALTIMORE, Woman's College of.** See GOUCHER COLLEGE.

**BALTIMORE FAMILY,** founders and proprietors of Maryland, consisted of seven successive lords of the barony of Baltimore in the Irish peerage, and a cadet who was governor has been added.

GEORGE CALVERT, the 1st lord: b. about 1580, Kipling, near Bolton Castle, Yorkshire: d. 15 April 1632. He graduated from Trinity College, Oxford, 1597; traveled abroad, and after his return became secretary to Sir Robert Cecil (afterward Lord Salisbury), clerk of the Crown of Ireland, 1606, and clerk of the Council, 1608. He assisted James in his controversial writings, had charge of the Spanish and Italian correspondence during the Secretary of State's absence in 1613, was on a committee to investigate Irish Catholic grievances the same year, was knighted 1617, and in 1619 was made Secretay of State by Buckingham's favor. He represented Yorkshire jointly with Sir Thomas Wentworth (afterward Lord Strafford) in the Parliament of 1621, and in the stormy times that followed was a mediator between Parliament and King, with the usual fate of being thought a spy by the one and lukewarm by the other. The French Ambassador styled him an honest, sensible, well-intentioned man and zealous patriot, and therefore without influence. He had principal charge of the foreign negotiations while James was chasing the will-o'-the-wisp of the Spanish marriage and making England a nullity in the Thirty Years' War; Calvert's later Catholicism made him suspected as favoring the latter policy, but in fact he wished a more energetic one. On 14 Jan. 1624 he was one of the nine councillors who opposed a breach with Spain. In January 1625 he announced himself a Roman Catholic; his conversion is credited to Gondomar, the famous Spanish Ambassador, and Lord Arundel of Wardour, his son's father-in-law. On 12 February he resigned his office and was given the barony of Baltimore: which, as James hated "apostasy," measures his esteem for Calvert. On the accession of Charles I, in 1625, Baltimore refused, from conscientious scruples, to take the oath of supremacy and abjuration, and Charles gave him a handsome letter to the Lord Deputy of Ireland. In 1627 he was summoned to court to consult on the peace with Spain, but thenceforth took no part in public business, devoting himself to colonization. Already in 1621–22 he had planted a colony in Newfoundland, chartered in 1623 as Avalon; in 1627 and 1628–29 he visited it, but the severe climate disappointed him and he begged for a grant in a milder one. Without waiting for a reply he attempted to explore Virginia for a settlement; but the Jamestown officials of the old Virginia company refused permission unless he would take the oath above. The region satisfied his ideal, however, and he persisted in asking a grant there against the dissuasions of Charles, who finally assigned him a northeastern tract, now the States of Maryland and Delaware; but the same interests delayed the proceedings, and before the charter was signed, 20 June 1632, Baltimore died. The usual assumption that he intended the colony for a Roman Catholic establishment is refuted by the fact that the charter established the Church of England and did not even specify toleration for other creeds, which was not made a provision of law till 1649, though of course intended, and proclaimed at once on the establishment of the colony. Baltimore thought — wrongly, as it turned out — that the proprietary's power and the religion of the chosen colonists would prevent the persecution of his own faith, and had neither wish nor power to persecute others. That he meant it as an asylum and breeding-ground for his religion is a matter of course. It was also to be a feudal aristocracy, but with an assembly of freemen whose consent was necessary to the validity of laws. In a word, Baltimore was a conservative of high principles and moderate temper.

CECILIUS or CECIL CALVERT, the 2d lord: b. about 1605; d. 30 Nov. 1675. He married Anne Howard, daughter of Lord Arundel of Wardour (after whom Anne Arundel County of Maryland is named), about 1623. The charter of Maryland granted to his father was transferred to him as heritor; but he never visited it during the 43 years of his life thereafter, sending deputies in his place, and managing its business and political affairs judiciously from England, settling disputes of natives or colonists sensibly and placably, and esteemed a worthy successor to his father. Down to the civil war of 1642 he had little to do but support his brother, Leonard, as governor; but his policy then became difficult. He tried to steer a middle course, and avoid either for himself or the colony any pronounced declaration of sympathies or allegiance which might expose it to confiscation; but Ingle's upset of the colonial government (see LEONARD CALVERT), and the Parliamentary triumphs at home, showed him at last that this could not be maintained, and that with the Puritans at the head, the Roman Catholic supremacy, though used only to preserve themselves from persecution, must be given up. On 9 June 1647 Leonard died, after appointing as his provisional successor an ardent churchman and loyalist, Thomas Green; but Lord Baltimore in 1648 appointed Capt. William Stone and had him settle some 500 Puritans, harried by the Virginia Cavaliers, in Maryland. When the news of the King's death arrived, Green, in Stone's absence, proclaimed Charles II King, as did Virginia; on which William Claiborne (q.v., and below), the treasurer of Virginia, joined the Parliamentary party, obtained a commission to reduce the two rebellious provinces, and, after overthrowing the Virginia government, forced Governor Stone to renounce his allegiance to Lord Baltimore and give it to the "keepers of the liberties of England." When Cromwell dispersed the Long Parliament Stone repudiated the agreement; Claiborne marched against him, deposed him and appointed a Puritan government which at once most ungratefully disfranchised all Catholics and repealed the Colonial Toleration Act of 1649. In January 1654 Cromwell himself intervened, and forbade the Virginia authorities to molest Lord Baltimore or his officers in Maryland. Baltimore thereupon ordered Stone to overturn the Puritan government, but Stone's force was defeated and himself captured. Baltimore, however, kept his favor with the Puritan administration; the commissioners of plantation decided that the province was his, and in 1658 it was restored to him. Claiborne's influence was at an end, and Baltimore had no further troubles over Maryland.

LEONARD CALVERT, younger brother of Cecilius, was sent out by the latter as first governor of the new colony: b. about 1606; d. June 1647. He set sail 22 Nov. 1633, in the *Ark* and the *Dove*, with about 200 Roman Catholic settlers of good families; arrived 24 Feb. 1634, at Point Comfort, landed 25 March on an island in the Potomac, which they named Saint Clement's, and founded on the site of an abandoned Indian village a town, Saint Mary's, long since deserted. He met an Englishman, Capt. Henry Fleet, who had lived some years among the Indians and helped him to gain their consent to the settlement. But he found Kent Island in the Chesapeake, the great island opposite Annapolis, settled by one William Claiborne (q.v.), under a grant from the dissolved Virginia company, effectively enough to have a representative in the Virginia legislature. Calvert claimed right of property and political jurisdiction over the island, Claiborne denied both, and Virginia upheld him; and the warfare that ensued embroiled the two colonies for many years, complicating itself with the issue of Churchmen against Catholics, then (by the oddest irony of fate) with Cavaliers in Virginia against the Puritans who had overborne the Catholics in Maryland, and finally with a rankling boundary dispute. Claiborne poisoned the Indians' minds against the Marylanders as a set of treacherous Spaniards; Calvert sent an expedition against him, which captured two boats, with mutual loss of life, in April and May 1635. Claiborne had further losses, and became bankrupt, but in 1637 bought of the Indians Palmer's Island, at the head of Chesapeake Bay, as beyond Baltimore's grant, and petitioned for an injunction against Baltimore's interfering with him. The commissioners of plantation refused him the grant, despite his purchase, on the ground that he had only a trading license. Meantime Kent Island continued insubordinate, and Calvert had to make an expedition against it in person, reducing it and occupying Palmer's Island also, and capturing one of Claiborne's lieutenants, who was put to death for piracy and murder in the former troubles. Calvert now undertook to introduce the feudal system contemplated by his father's charter; but as the freemen's consent was necessary to this, and they refused to give it to their own abasement, the scheme was blocked and in fact never carried out. The civil war of 1642 having broken out, cautious steering was needed to avoid risking confiscation from one side or the other, and Calvert went to England to consult his brother, leaving one Brent as deputy, who brought on the very catastrophe dreaded, by seizing a Parliamentary vessel and imprisoning the captain, Richard Ingle. Ingle escaped, obtained letters of marque from Parliament, allied himself with Claiborne, who had been made the treasurer of Virginia for life by the King, but had no politics except for his own hand, and by the time Calvert returned with a new commission in 1644 had possession of the colony and was plundering right and left. Calvert, in an attempt at repossession, was defeated and fled to Virginia, which had remained loyal to the King, and appealed to the colonial government for help; they refused to give it; finally he got a force together, and in December 1646 returned and drove Ingle out — one of the flying rebels, however, carrying off all the early records of the colony, which have never reappeared. He died the next year, leaving an unfortunate provisional appointment of a successor, which made even worse trouble for the colony than the last deputy.

JOHN, the 3d lord; CHARLES, the 4th; BENEDICT, the 5th; CHARLES, the 6th; and FREDERICK, the 7th and last, complete the roll. FREDERICK was a foolish and worthless rake, and perhaps worse. Born in 1731, he died 14 Sept. 1771, leaving no legitimate heirs, but apparently a natural

brood of some ability. The proprietary rights in Maryland were bequeathed to a child, Henry Harford, but four years later were rendered worthless by the Revolution.

**Bibliography.**— 'Dict. National Biog.' (London); Browne, W. H., 'George Calvert and Cecil Calvert, Lords Baltimore' (New York 1890); Hall, C. C., 'The Lords Baltimore' (Baltimore 1905); Kennedy, J. P., 'Discourses on the Life of George Calvert' (Baltimore 1845).

**BALTIMORE AND OHIO RAILROAD, The. History.**— The fact that the only use of rails for locomotion in 1827 on either side of the Atlantic was for coal carrying, renders the more remarkable the action of the coterie of merchants and bankers of Baltimore, gathering at Philip Thomas' house on the evening of 18 February of that year, in deciding to proceed forthwith to build a railroad for general purposes. The Ohio, at Wheeling, was made the objective point; the intervening Blue Ridge and Allegheny Mountains evidently suggesting no difficulties that could not be surmounted. But a week elapsed from the time of the initial meeting to the second, at which the committee appointed at the first reported the resolution, namely: "That immediate application be made to the Legislature of Maryland for an act incorporating a joint stock company to be styled the Baltimore and Ohio Railroad Company, and clothing such company with all powers necessary for the construction of a railroad with two or more sets of rails from the City of Baltimore to the Ohio River." The capital stock was fixed at $5,000,000.

The Baltimore and Ohio's charter, granted of date 28 Feb. 1827, was the first anywhere coming into existence defining and authorizing procedure to completion. Under it the Baltimore and Ohio Railroad Company is still acting, it being the only enactment of the character of the pioneer days of the railroad in this country or Europe remaining fully operative; the B. & O. being the single railroad company of those times yet retaining, unchanged, its original name and organization.

On 23 April 1827 the Baltimore and Ohio Railroad Company was formally organized, Philip E. Thomas elected president and George Brown treasurer. Preparations were immediately inaugurated to secure a survey of the proposed line, the measures to which end were begun on 2 July. In this the United States government authorities were induced to co-operate to the extent of relieving Col. Stephen H. Long, of the Topographical Corps, from his regular duties, who, with Jonathan Knight, a Quaker civil engineer of repute, forthwith proceeded with the actual work, the date of its formal commencement being 20 November. On 5 April 1828 they submitted the result of their labor to that period; and the line west to the Patapsco and thence via its valley to Point of Rocks on the Potomac was decided upon as the first section to be undertaken.

But persistent, bitter and vehement opposition by the canal authorities was encountered and this was even carried to legislative chambers and the courts, but despite this trouble and a few adverse decisions by the courts, the Baltimore and Ohio pushed on from Baltimore west, and three miles were completed and experimented upon early in 1829. On 22 May 1830 the first section of the Baltimore and Ohio — that from Baltimore to Ellicott City, a distance of 14 miles — was formally opened for public use. Horse-power was the standard means of locomotion pending development of the locomotive to a more assuring stage than then reached anywhere from whence reliable information could be obtained. (See LOCOMOTIVE, THE). "Brigades of cars" were announced to run three times each way daily, the fare named at 25 cents and business commenced in earnest. This was four months in advance of the formal opening of the Liverpool and Manchester, the first railway abroad for general purposes, its date being 15 Sept. 1830.

Many difficult problems in the mechanics of railroading were decisively solved. Car wheels were first made with the flange on the inside edge, but their causing so many derailments and so frequently breaking led to the change of the flange to the outer edge. But this increased the difficulty on the curves and the conical flange was invented. The anti-friction box on the axles and the practice of placing on the outside instead of the inside of the wheels were both first introduced by Winans; as was also the eight-wheel car. When the main line of the Baltimore and Ohio was completed its roadbed embodied the highest engineering skill of the period in the traversing of mountain ranges; was the longest continuous railroad in the world, with the greatest bridges, trestles and tunnels. Its track construction throughout, and especially its manner of meeting the curvature and providing against slides from the environing mountain sides, were lessons in line construction and operation availed of by the whole world.

The Baltimore and Ohio was completed to Frederick, 61 miles, 1 Dec. 1831; to Point of Rocks, 69 miles, 1 April 1832; and to Harper's Ferry, 81 miles, 1 Dec. 1834. The initial move toward Washington was the letting of the contract in May 1833 for the construction of the Thomas Viaduct spanning the Patapsco at Relay. This remarkable granite structure, designed and erected under the personal supervision of Benjamin H. Latrobe, was built for the carrying of six- or seven-ton engines drawing from 15- to 20-ton trains, and meets with equal safety the demand of 170-ton locomotives at the head of 12- to 15-hundred ton trains. It was the marvel in the world's railway circles when constructed. The longest, highest and generally most imposing railroad crossing known, it was the first on a curve and regarded, therefore, as the boldest of departures from the rule.

Two years were required to complete the Washington branch, and it was not until 25 Aug. 1835 that the echoes of the national capital resounded back the locomotive's shrill awakening. With the opening of the branch, the railway postal service came into being, its earliest form the boarded-up end of a baggage car, the two keys of which were held by the postmasters of Washington and Baltimore.

The declaration of the first railroad dividend in history, a semi-annual of the Baltimore and Ohio, was made simultaneously with the opening of the Washington branch, and the securities of the latter were the first of American railway issues marketed abroad.

The greatest of eventualities, however, with which the Washington branch's history is linked was the birth of the telegraph. "What Hath God Wrought," the first four words transmitted by wire over a public line, were sent from Baltimore to Washington via the roadbed of the Baltimore and Ohio branch.

Hancock, 123 miles from Baltimore, was reached by the Baltimore and Ohio on 1 June 1842; Cumberland, 178 miles, on 5 Nov. 1842; Piedmont, 206 miles, on 21 July 1851; Fairmont, 302 miles, on 22 June 1852; and the last spike, finishing the great undertaking from Baltimore to Wheeling, 379 miles, was driven on 24 Dec. 1852. The formal opening of the road was marked by a notable demonstration 10 Jan. 1853. There being no rail connection beyond, and the prospects bright for Cincinnati and Louisville business in the one direction and Pittsburgh in the other, a company was organized and a daily steamboat service established "superior to anything floating upon western waters."

With the completion of the Parkersburg branch from Grafton — or the mouth of Three Forks, as it was then known — to Parkersburg, 1 May 1857, the Ohio was reached at another point, and a very important one, as through rail connection had been perfected thence to Cincinnati, 10 days before, 20 April. The opening of the Parkersburg bridge, 7 Jan. 1871, was the last link in the continuous rail from the Chesapeake to the Mississippi.

The old Marietta and Cincinnati, the Ohio and Mississippi and other railways, once separately conducted companies, long since became component parts of the Baltimore and Ohio system, which, since the finishing of the Chicago division, 10 Nov. 1874, has been among the foremost in the metropolis of the northwest, as, through being the pioneer into Cincinnati and Saint Louis from the East, it has ever been in those centres.

At Pittsburgh, as well, the Baltimore and Ohio's position is a commanding one. Reaching the great central point from Cumberland in July 1860, later building and acquisitions led to radiating lines to Cleveland, Chicago, Cincinnati, Wheeling and other points of traffic concentration. Eastward from Baltimore the construction of the extension to Philadelphia and its opening, 19 Sept. 1886, together with security holdings in lines through to New York assured important place among the railways centring in the country's leading city.

**Mileage.**— On 30 June 1915 the Baltimore and Ohio Railroad proper consisted of the following lines:

| DIVISION | MILES |
|---|---|
| New York District | 5.35 |
| Main Line District | 1,189.08 |
| Wheeling District | 1,103.00 |
| Pittsburgh District | 1,252.49 |
| Southwestern District | 985.35 |
| | 4,535.27 |

By divisions this mileage is as follows:

| | MILES | TOTAL |
|---|---|---|
| NEW YORK DISTRICT | | 5.35 |
| New York Division | 5.35 | |
| MAIN LINE DISTRICT | | 1,189.08 |
| Philadelphia Division | 119.31 | |
| Baltimore Division | 238.30 | |
| Cumberland Division | 292.90 | |
| Shenandoah Division | 114.37 | |
| Monongah Division | 424.20 | |
| WHEELING DISTRICT | | 1,103.00 |
| Wheeling Division | 217.42 | |
| Ohio River Division | 231.64 | |
| Cleveland Division | 223.92 | |
| Newark Division | 430.02 | |
| PITTSBURGH DISTRICT | | 1,252.49 |
| Connellsville Division | 348.31 | |
| Pittsburgh Division | 342.50 | |
| New Castle Division | 277.73 | |
| Chicago Division | 283.95 | |
| SOUTHWESTERN DISTRICT | | 985.35 |
| Ohio Division | 335.14 | |
| Indiana Division | 255.49 | |
| Illinois Division | 394.72 | |
| Grand total for entire B. & O. System | | 4,535.27 |

**Equipment.**— The total equipment for the entire system, valued at $93,908,383.33, as of 30 June 1915, was as follows:

| | |
|---|---|
| ROLLING STOCK | |
| Locomotives and Spare Tenders | 2,399 |
| Passenger Cars | 1,261 |
| Freight Cars | 86,097 |
| Service Cars | 3,172 |
| MARINE | |
| Steam Lighters and Tugs | 14 |
| Barges, Floats and Scows | 121 |

**Traffic Statistics.**— For the year ending 30 June 1915 the total number of tons of freight carried by the B. & O. system was 64,375,595. The total ton mileage was 12,970,894,074. The number of passengers carried was 20,581,992, or 714,368,423 passengers one mile. The freight earnings for the B. & O. lines were $70,780,808.51 and the passenger earnings were $14,059,940.41.

**Finances.**— The general income account of the Baltimore and Ohio Railroad Company for the year ending 30 June 1915 was as follows:

| | |
|---|---|
| Gross earnings | $91,815,797.34 |
| Operating expenses | 63,925,507.74 |
| Net earnings from operations | $27,890,289.60 |
| Other income | 5,260,847.77 |
| | $33,151,137.37 |
| Total payments, including dividends | 32,379,663.51 |
| Surplus | $771,473.86 |

The capital stock (preferred and common) outstanding on 30 June 1915 was $210,811,885.17; the funded debt was $398,799,159.81; the total capital liabilities $609,611,044.98. The capital assets of the company were $620,109,759.23, consisting of the following: Cost of road, including bonds and stocks held by trustees, $441,810,562.45; real estate, $6,667,735.88; equipment, $93,708,383.33. The company also owned bonds and stocks of railroad and other corporations to the value of $77,923,077.57.

**BALTIMORE ORIOLE.** See ORIOLE.

**BALTISTAN,** bäl-te-stän', or **LITTLE TIBET,** an elevated plateau through which the upper Indus flows. It lies below the Kara-Koram Mountains and the Himalayas, with a mean elevation of 11,000 feet, and contains the nameless peak marked $K^2$, 28,278 feet high, next to Everest, the highest on the globe. It is politically a province of Kashmir.

**BALTZER, Johann Baptista,** German theologian: b. Andernach 1803; d. 1871. He

was educated at the University of Bonn, was ordained to the priesthood in 1829, and in the following year became professor of theology at Breslau. He was an enthusiastic follower of Georg Hermes in the latter's effort to effect a reconciliation of Roman Catholic teaching with the newer German philosophy. In 1839 he broke away from this connection and became a follower of Anton Günther. When Günther came under the ban of the Church Baltzer submitted, but he was soon involved in other difficulties with the ecclesiastical authorities and these differences led to his suspension in 1862. He opposed the promulgation of papal infallibility and became an ardent promoter of the Old Catholic movement. He wrote 'Die biblische Schöpfungsgeschichte' (2 vols., 1867–73) and 'Ueber die Anfänge der Organismen' (4th ed., 1869). Consult the biographical sketches by Friedberg (Leipzig 1873) and by Melzer (Bonn 1877), both in favor of Baltzer's attitude, and Franz (Berlin 1873), representing the opposite side.

**BALTZER, Wilhelm Eduard,** German theologian: b. Hohenleine 1814; d. Grotzingen 1887. He was educated at Leipzig and Halle, and was ordained to the Lutheran ministry. His liberal views led to his being looked on with disfavor, and in 1847 he founded a free church of his own and soon became the leader of the movement known as the «Freie Gemeinden,» or free religious communities which arose in opposition to dogmatic and traditional theology. Baltzer was the leader of the movement until 1881, when he retired to Grotzingen, and spent his remaining years in the promotion of vegetarianism. He wrote 'Alte und neue Weltanschauung' (4 vols., 1850–59); 'Gott, Welt, und Mensch' (1869); 'Vegetarisches Kochbuch' (14th ed., 1900).

**BALUCHI,** bą-loo'chē, the language of Baluchistan, one of the Iranian group of languages. There are two dialects, the north Baluchi and the south Baluchi, or Maprani; the latter shows more ancient features.

**BALUCHISTAN,** bă-loo'che-stän', a country in the south of Asia, lying between Persia and the valley of the Indus, having the former on the west, Afghanistan and the Northwest Frontier province on the north, Sindh, the Punjab and part of the Frontier province on the east and the Arabian Sea on the south; area, about 134,638 square miles. It is wholly under British influence and partly under British rule, an area of 9,096 square miles forming part of the Indian empire; the rest of the country is divided into Agency territories under British control (about 45,132 square miles), and the native states of Kalat and Las Belas. The general surface of Baluchistan is rugged and mountainous, with some extensive intervals of barren sandy deserts. In the case of the principal ranges, the general parallelism and uniformity of their formation are somewhat remarkable, one system having an inclination from north to south, another from east to west. Many of these mountains are of great height and are covered with snow. There are several broad and high table-lands, extremely cold in winter and extremely hot in summer. Makran in the south, the ancient Gedrosia, is one of the hottest regions of the globe. Some of the mountain chains are of compact limestone, enclosing marine shells and corals identical with similar objects picked up on the sea-shores at this day. Excepting fragments of quartz found in Lus, primary formations have not been observed in any part of the Baluchistan Mountains. The mineral wealth of the country is believed to be considerable, but is almost undeveloped; lead, iron, many kinds of mineral salts, coal, asbestos, chromite and oil have been found. Throughout Baluchistan there is a great deficiency of water, particularly in summer. In the northeast part are the rivers Bolan and Mula, the courses of which form the celebrated passes bearing their names, leading from the valley of the Indus to Baluchistan and Afghanistan. In the south are the Hingol and the Dasht which flow into the Arabian Sea. The coast has a length of about 600 miles; it is very little indented and has no good harbors. The soil is not in general fertile, but by patient industry the plains and valleys can be made productive in wheat, barley and millet. The other chief crops are rice, maize and potatoes. Vegetables are abundant, and excellent fruits are produced in the gardens and orchards in the neighborhood of the towns. Panjgur in Makran is celebrated for its dates. Fine camels are bred in large numbers.

The inhabitants are composed of numerous races, the chief of which are the Baluchis or Baloch, the Pathan and the Brahuis, different in their languages, figures and manners, and each subdivided into a number of minor tribes. The Baluchis are of Arabian, Dravidian and Persian stock, and though essentially robbers and raiders have many fine characteristics. The Brahuis are less addicted to predatory violence Both races are hospitable, brave and capable of enduring much fatigue. Many of them live in rude tents made of black felt or coarse cloth of goat's or camel's hair stretched over a frame of wickerwork. Both Baluchis and Brahuis are Mohammedans of the Sunnite creed. Both are less violent and bloodthirsty than the Pathan. The Baluchi language resembles the modern Persian, the Brahui presents many points of agreement with the Hindu. The manufactures are mostly confined to coarse fabrics, a few matchlocks and other weapons, and iron work for agricultural purposes. Leather work and pottery are manufactured in certain parts and the Brahui women do excellent needlework. Overland trade with India is carried on by the Sindh-Pishin Railway and camel caravans, the chief exports being mustard, rope, raw wool and food grains. The chief exports by sea are dates, matting and dried fish. The Khan, so far as his rule extends, has unlimited power over life, person and property. He usually resides at Kalat, and his rule is almost confined to the country around it. Quetta is the largest town. It is occupied by a British garrison and strongly fortified. Southern Baluchistan was the ancient Gedrosia, described by Arrian, the historian of Alexander the Great. The country was ruled by Hindu princes until the end of the 17th century when it was subdued by the Brahuis under their leader, Kumbar, who had been summoned to assist the Hindu rulers against turbulent tribesmen. A descendant of Kumbar, Nasir Khan, was confirmed in his authority over numerous tribal chiefs by the celebrated Nadir

Shah, ruler of Persia, who overran Baluchistan during his invasion of Hindustan in the middle of the 18th century, and as Khan of Kalat, Nasir proved himself the ablest ruler who ever governed the country. On his death in 1795 he left it in a fairly prosperous condition but it suffered later from intestine wars and its boundaries have been curtailed. In 1839 when the British were advancing toward Afghanistan the treacherous conduct of the Khan led to the capture of Kalat by General Willshire. In 1854 a treaty was executed between the British government and Nasir Khan II under which he received a yearly subsidy of 50,000 rupees which was later raised to 100,000 rupees. British residents were appointed to the court of the Khan but the country was considered independent until 1877 when the cantonment of Quetta, now the headquarters of the administration and terminus of the Indian railway system, was occupied by British troops. In 1879 the district was taken over by the administration on behalf of the Khan and in 1883 was made over to the British by the Khan together with the district of Bolan on payment of an annual quit-rent. Other districts have also been assigned to Great Britain and go to make up British Baluchistan (about 9,096 square miles), administered by a chief commissioner under the governor-general of India. Other territories under British control have an area of about 45,132 square miles. Kalat and Las Belas, formerly a fief of the Khan of Kalat, are under the control of a British political agent in Kalat. Their combined area is 80,410 square miles. There are 832 miles of metaled and partly metaled roads in the whole of Baluchistan. In 1917 there were 782,648 Mohammedans, 37,602 Hindus, 8,390 Sikhs and 5,085 Christians. In 1916 there were 73 government and aided and unaided schools with 3,263 pupils and 70 private schools with 865 pupils.

**Bibliography.**— Consult the annual administration reports of the Baluchistan Agency (Calcutta); also Hughes, A. W., 'The Country of Baluchistan' (London 1877); MacGregor, C., 'Wanderings in Baluchistan' (London 1882); Oliver, E. E., 'Across the Border or Pathan and Baluch' (London 1891); Holdich, Sir T. H., 'The Indian Borderland' (London 1901); id., 'The Gates of India' (London 1910); Dames, 'The Baloch Race' (Asiatic Society Monographs, Vol. IV, London 1904).

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**BALUCKI,** bą-loots'kę, **Michael.** Polish author, known under the pseudonym ELIPIDON: b. Cracow, 29 Sept. 1837; d. 1901. As a storyteller he had shining gifts — a brilliant style, free and spontaneous humor — and in both novel and comedies held up to a genial ridicule the shortcomings and prejudices of Polish society. Among his principal works of interest may be mentioned 'The Awakening' (1863); 'The Young and the Old' (1866); 'Life Among Ruins' (1870); 'The Jewess' (1871); 'For Sins Not Committed' (1879); '250,000' (1883). The best among his comedies are 'The Chase After a Man' (1869); 'The Emancipated' (1873); 'Amateur Theatre' (1879); 'The Town Council' (1880); 'The Open House' (1883); 'Miss Valerie' (1891); 'The Burgomaster of Pipidowka' (1894).

**BALUSTER, or BALLISTER,** a kind of short column, sometimes in the form of an ancient bow, sometimes made after the model of Greek and Roman columns, employed in the construction of balustrades.

**BALUSTRADE,** a series of balusters surmounted by a rail, and placed as an ornament on large buildings, above the cornice, or as a protection to enclose bridges, stairs, balconies, altars and the like.

**BALUZE,** bä-lüz, **Etienne,** French scholar and historian: b. Tulle, 24 Dec. 1630; d. Paris, 28 July 1718. He early acquired distinction by his varied and thorough knowledge, and was called to Paris by the celebrated Colbert, who commissioned him to make up his private library. In 1707 he was appointed to the supervisorship of the royal college, and dismissed from that office in 1709, being suspected of having in his 'Histoire Généalogique de la Maison d'Auvergne, designedly established, by documentary evidence, that the princes of Bouillon were descended from the ancient dukes of Guienne, counts of Auvergne, and therefore owed no allegiance to the king of France. Such an offense could not be forgiven; and Baluze, deprived of nearly all his income, was compelled to reside successively at Rouen, Blois, Tours and Orléans, and not until after the conclusion of the Peace of Utrecht was he permitted to return to Paris. He was of the most amiable temper, and his wit was equal to his cheerfulness.

**BALVANY,** the Magyar name for idol, found in mediæval Latin documents of Hungary, and also in Hungarian geography, applied to various heights which were the last strongholds of paganism in the 11th century.

**BALVAS, Antonio,** Spanish poet: b. Segovia in the middle of the 16th century; d. 1629. He wrote 'El poeta Castellano' (1627), a work highly praised by Lopez de Vega.

**BALY, William,** English physician: b: King's Lynn 1814; killed in a railway accident near Wimbledon, 28 Jan. 1861. He studied at University College and Saint Bartholomew's Hospital, London, in Paris, at Heidelberg and Berlin, where he received his M.D. degree in 1836. He commenced practice in London, and in 1840 was appointed physician to Millbank penitentiary, where he attained a reputation as an expert in the hygiene of prisons, on dysentery and cholera. He was appointed lecturer at Saint Bartholomew's Hospital; became a fellow of the Royal Society in 1847; in 1859 was chosen as one of the physicians to the royal family, and later became censor to the College of Physicians and Crown representative in the Medical Council. He wrote 'Diseases of Prisons'; 'Gulstonian Lectures on Dysentery' (1847); translated from the German Müller's 'Elements of Physiology' and 'Recent Advances in the Physiology of Motion, the Senses, Generation and Development'; and, with Gull, wrote 'Epidemic Cholera' (1854).

**BALZAC,** băl'zăk' **Honoré de,** French novelist: b. Tours, 16 May 1799; d. Paris, 17 Aug. 1850. His family was of no account, and the aristocratic "de" (adopted perhaps in good faith) dates from 1830 or thereabouts. The surname itself seems to have been properly

HONORÉ DE BALZAC

spelled Balsa, or Balsas, the first to alter it being the novelist's father, whose parents were peasants in Languedoc. Little is known of the elder Balzac's career, except that he was at one time a lawyer and later an officer in the commissariat; he married past middle age, and at the time of Honoré's birth filled certain municipal offices in the city of Tours. He is represented as a man of whimsical character, caustic but indulgent, with a wonderful memory, and full of schemes for making millions and reaching the age of 100. His wife, whose name was Sallambier, had good looks and a fortune; she is said to have been pious and imaginative, and devoted to her children's welfare, but by no means outwardly tender to them. At any rate Honoré and his favorite sister Laure (afterward Madame Surville), if not her two younger children also, were brought up very strictly.

He was sent to school early with the Oratorians of Vendôme and was as miserable there as his Louis Lambert. All he learned was by desultory reading, and that in books too deep for his age. His masters thought him dull and lazy, and his absent-mindedness having developed into a sort of daze, he was withdrawn by his parents and became a day-scholar for a time at the Collège de Tours. Neither there nor at a boarding-school in Paris, to which city the family removed in 1814, was he by any means a brilliant pupil; and at home not only his talents but the ambition to write which had already seized upon him remained quite unsuspected. In 1816 he was put into a lawyer's office and 18 months later began to work with a notary, both his chiefs being intimate friends of the family; at the same time he attended various lectures at the Sorbonne, and was becoming familiar with the great writers of his country. His mind was made up to devote himself to literature, when in 1819, M. de Balzac, who had recently lost money in speculation and was about to retire, announced to Honoré that his friend the notary offered to take him into partnership with the prospect of succeeding to his practice. Honoré resisted, and begged for a chance to show his literary gift; after some discussion his father gave him his way and, while the family made its own home at Villeparisis, he was installed in an attic near the Arsenal Library on a two years' trial of his powers, with an allowance barely sufficient to keep him from starving. Here in cold and hunger and solitude, but supported by his unconquerable gaiety and self-confidence, he set to work first on two tales which were soon to be finished, then a comedy, lastly a tragedy in verse, 'Cromwell,' which he firmly believed to be a masterpiece. He brought it home with him in the spring of 1820; the family yawned when he read it, and a friend to whose judgment this first composition was submitted, Andrieux, the academician and professor, recommended the young man to try his hand at anything in the world but literature. He had only spent 15 months of his probation, but his mother insisted that he should now live at home; privations had already told upon his vigor, and he was obliged to recruit in Touraine before settling down at Villeparisis. There, nothing discouraged, in the next five years he wrote, with different collaborators, no less than 31 volumes of fiction, and found publishers for them. Of the entire worthlessness of this early work he was perfectly aware; it appeared under various pseudonyms ('Horace de Saint-Aubin' was the favorite), and when long afterward in great distress for money he allowed it to be republished, he would never acknowledge the paternity.

It was at this time that he became acquainted with the Berny family, then resident at Villeparisis, and formed with Madame de Berny — a woman more than 20 years older than himself — a close friendship which lasted until her death in 1836, and to which he owed perhaps the most generous and disinterested sympathy that he ever received from man or woman.

In 1824, determined to win his independence, young Balzac returned to Paris and set up business as a publisher on borrowed capital. He had a great scheme — the first of many — for making a fortune by bringing out one-volume editions of the French classics, and began with Molière and La Fontaine; but chiefly for want of proper advertising the venture failed. He next became a printer, having induced his father to advance him the sum necessary to buy the stock and a printer's license, and seeing a type-foundry offered at a bargain he presently acquired that also. It was a most disastrous speculation; bankruptcy was only averted by the help of his mother and of Mme. de Berny, and this was the beginning of his life-long indebtedness.

Before his business was wound up Balzac was already at work, in a room in the Rue de Tournon, upon the first novel to which he signed his name. 'Les Chouans' was finished during a visit to Fourgères, in the district which is the scene of the historical events it describes, and published in 1829 with some success. The rather cynical manual called 'La Physiologie du Mariage' followed; then a number of shorter stories, and, in 1831, 'La Peau de Chagrin' — with which book his reputation became fairly established. Publishers and editors now sought for his work, and the curiosity and interest his writings already excited are attested by the anonymous correspondence which began at this time to pour in upon him. It was in this way that in 1830, he made the acquaintance of two women, the Marchioness de Castries and Mme. Hanska, whose names cannot be omitted from any account of his life. For Mme. Castries Balzac conceived a transient, but certainly strong passion, which seems to have only gratified the vanity of a rather heartless but very intelligent great lady; she made a plaything of him; but he owed to her his most genuine insight into the manners, traditions and ideals of the close society of the Faubourg Saint-Germain. Her portrait, it is conjectured, may be found in 'La Duchesse de Langeais.' Mme. Hanska, a Polish lady of noble birth, married to a Russian in the Ukraine, was the object of his deepest and most enduring affection, and finally became his wife. His letters to this «Etrangère» have in recent years been published; they are discreet, frequent and voluminous, for these friends or lovers were seldom together, even after the death of M. Hanska, until the last two years of Balzac's life. His biographers have little tenderness for Mme. Hanska; hers was certainly an inexpansive nature; her love for her only child, the Countess

Anna (afterward Mme. Mniszech), seems to have almost excluded other affections; she cared excessively for her rank and her comfort; tortured the great man by long deferring to fulfil her secret engagement with him, and in his last illness appears to have shown herself incredibly callous. Mme. Honoré de Balzac lived until 1882.

Balzac's story, from 1830 onward, is mainly the story of his herculean industry; and the most memorable dates in his life are doubtless those of the production of such masterpieces as 'Louis Lambert' (1832), 'Le Médecin de Campagne' and 'Eugénie Grandet' (1833), 'La Recherche de l'Absolu' and 'Le Père Goriot' (1834), 'César Birotteau' (1837), 'Illusions Perdues' (1835–41), 'Les Paysans' (1844–45), 'La Cousine Bette' (1846), 'Le Cousin Pons' (1847). Between 1830 and 1842 he wrote no less than 79 novels, besides much other literary work. After that date his literary activity slackened somewhat as his health began to fail. But during a considerable number of years, for long intervals together, he never worked less than 12 hours each day, often worked for 15 hours, or even for 20 at a stretch, supporting himself on a lean diet in which fruit was always an important element, and drinking as much coffee as the philosopher Kant. But he was never out of harness, even during his frequent absences from Paris — whether staying with friends in the French provinces, or art collecting in the north of Italy, or mine-prospecting in Sardinia (one of his most extraordinary ventures), or visiting Mme. Hanska at Geneva, Vienna, Berlin or Saint Petersburg. These travels, a short-lived journalistic enterprise — *La Chronique de Paris* — several excursions into drama, more than one attempt to force the doors of the French Academy, and many quarrels with the press — a lawsuit with the *Revue de Paris* made some stir in 1836 — are the chief outward events of Balzac's maturity. Throughout his career the money question is distressingly prominent, and the history of Balzac's liabilities is long and queer and complicated. The sums he made by his pen were very considerable; but his optimism was at least as great as his acquisitive faculty. No man was more capable of penurious living; none loved luxury better; but decent comfort and regularity were beneath or beyond him. Spells of asceticism were succeeded by fits of extravagance: the story of his suburban property Les Jardies, of his famous walking-stick, of the financier Goujon's house in the Rue Fortunée (now the Rue Balzac), which he bought for his future wife and spent half a million in filling with works of art — the very works described in 'Le Cousin Pons' — balances the story of his sacrifices, privations and his games of hide-and-seek with creditors. He was a born speculator; he was also the most generous of men, and sometimes unfortunate in the objects of his generosity.

The strain entailed by Balzac's way of living and by his constant mental agitation was such as no constitution — and his was extraordinarily robust — could resist very long. From 1842, or thereabouts, he began to suffer from time to time with heart and lung troubles, and from 1845 onward he was rarely well. It was during his second stay at Vierzschovnian, Mme. Hanska's property in the Ukraine, that his health began to give serious anxiety. For a time he improved; but the climate, the uncertainty in which he was kept as to the reward of his long devotion, certain material obstacles to his marriage, the necessity of conducting his literary and other transactions by proxy, the anxieties of the political situation in France, misunderstandings with members of his own family, and the effort to force himself to work when work was beyond his failing physical powers, all hastened his end. His marriage was solemnized at last in March 1850, at Berditchef, in Poland; rather more than two months later Balzac arrived in Paris with his bride. He was a dying man, though he clung almost to the last to the hope of living to finish 'The Human Comedy,' and extinguish what was left of his debts. Victor Hugo was among those who visited his deathbed, and the same great poet it was who paid a splendid tribute to his friend and peer at the graveside in Père Lachaise. Occurring in the midst of a grave political crisis, his death was less noticed than might have been expected; but though widely read and fervently admired among his contemporaries — more especially perhaps in foreign countries — it wanted at least another generation to assure his fame; nor (thanks to a combative spirit and an ingenuous vanity) did he lack enemies; though the mere dedications of his novels are enough to show that his friends were among the elect of his age, and it is impossible to read his correspondence without a feeling of respect, and even of affection, for a personality so rich, so valiant, so tenacious and so kindly.

It is best, in so slight an estimate of Balzac's colossal achievement as can be attempted here, to leave out of account not only the worthless fiction of his nonage but also his plays, of which only one, 'Mercadet,' first called 'Le Faiseur,' and produced with considerable changes after its author's death, can be said to have won or deserved success. An exceptional place belongs to the 'Merry Tales,' not so much in virtue of their notorious, guileless and jovial salacity as because, while the form is more essential there than in anything else he wrote, they are among the very few skilful *pastiches* in literature — for the lapses they contain from either the language or the atmosphere of the early French Renaissance are astonishingly few — in which the mere erudition does not replace or overshadow other merits. They are memorable for their genuine zest, inventive vigor and shrewd humanity.

Balzac's glory, of course, is that unfinished series of masterpieces called 'The Human Comedy,' which it is necessary to consider as one work in order to appreciate the audacity and breadth and steadiness of aim which are essential titles to his rank, not merely as the father of the modern novel and the supreme master of the craft, but as a genius of the universal order. In its most obvious bearing, it is an imaginative reconstruction of French society in every part and aspect, with all the vicissitudes and variations that affected it between the Revolution and the middle of Louis Philippe's reign: an heroical design, less comprehensive in regard to time and space than that of the Waverley novels, but more consistently and co-

herently executed out of more copious material. The picturesque, however, was subordinate to the philosophical interest, as he conceived it, of Balzac's undertaking. He intended his work for nothing less than a natural history of civilized man, which should illustrate the war between the passions of the individual and the social instinct or the common interest, the differentiation of types by the action of gregarious life, the reflection of personality in matter and the stamp of habits and calling upon character. The theory outlined by Buffon and bequeathed by Geoffroy Saint Hilaire to the first evolutionists, which supposes a single original pattern of organic creation varied by the mere efforts of environment, fascinated Balzac by a partly chimerical but, at any rate, suggestive analogy with human existence. "Does not society," he asked in his general preface of 1842, "make of man, according to the sphere in which his activity develops, as many different men as there are species in zoology?" This conception is enough to explain one great characteristic of his novels — the importance attributed in them to atmosphere, to local influences, to material conditions, to all that the elder novelists had regarded as accidental and accessory. It is Balzac who set the example of bestowing as much care upon *things* as upon *men* in works of fiction. The description of streets, houses, furniture and works of art, of implements and equipages, of dress and pastimes, of customs and offices, business and procedure and, in particular, of all that pertains to money, is throughout 'The Human Comedy,' not only exact and elaborate (sometimes to the point of tediousness and disproportion), but above all significant. Séchard's printing-press and Gaudissart's advertisements, the laboratory of Balthazar Claës, the aroma of Maman Vauquer's dining-room, are part and parcel of those famous personages.

The French imagination had tended for some time to desert that psychology *in abstracto* which had been at once the glory and the limitation of the great classical authors, and to pay more attention to the setting and the background of fictitious characters. Diderot particularly, who on several grounds might be called a herald of Balzac (and resembled him in vitality, variety of knowledge, fertility, hasty and unequal execution), had done much to carry into pure literature a spirit of curiosity about the common things of life, a new multiplicity of interests and concern for reality, and some of the results of natural science. But the romantic contemporaries of Balzac, most of whom were irresistibly allured by the prestige of the old and the distant, used the extension of imaginative matter to enhance the picturesque value of descriptions, rather than to enrich the definition of human types; for their interest in characters is generally insufficient, being dependent upon an introspection distorted as often as not by a morbid vanity. Balzac is unique in this, that with a searching modernity of outlook which omits none of the sensible elements of life from his imaginary world, he is yet essentially the restorer of the old, patient, constructive psychology and of the drama of internal action. It is remarkable how much of the spirit of the *grand siècle* survives in his work; how much of La Bruyère in the brilliant pages of moral analysis, of Corneille in some of his heroes of the will, of Molière in the smiling sanity of his attitude toward a necessarily imperfect society, of Racine in the sympathetic presentment of absolute passions and their victims! Balzac's personages — even the secondary figures — are at once individuals and types. They live with the intense life of living men and women; and we accept them as great moral symbols. They are highly differentiated, particularized with an unsurpassable sureness of detail; but they are also, one and all, informed by an *idea* — so that, though there is only one Goriot, he sums up all the tragedy of a primal affection run to seed and despitefully entreated; and there is only one Baron Hulot, but he contains all the shame of elderly profligacy, bringing disaster on whole families; and César Birotteau is inimitable, but he stands for all that is sterling as well as all that is ridiculous in the middle class.

In the vitality of his creatures Balzac is not inferior to Shakespeare himself. But we believe not only in the people he made, but in the whole world of 'The Human Comedy,' and accept it as a rival of reality. This mastery of illusion, the very highest virtue in a writer of fiction, does not depend upon veracity or exactitude of detail (a test which upon the whole he sustains triumphantly), but is simply the power to imagine strongly. It is true that in this case a system of composition which discarded chapters, or rather made of each novel (by the continual reappearance of old friends among the characters) a chapter in the whole work, is a powerful help to illusion; so of course are the accumulation of circumstances, and especially perhaps the variety and distribution of interests, in which Balzac's astonishing invention seems to play the part of chance.

The work of Balzac displays at one view the whole capacity of the form of literature called fiction, its scope and possibility of content. The ordinary tone of the French novel had once been heroic and pastoral; then it had tended to caricature and to the parodying of court memoirs; and later the ideal had been to amuse one class by showing the manners of another. The picturesque romance had been succeeded by "realistic" satires upon society and, with the advent of the *philosophes*, the novel became a pamphlet, a vehicle of moral or political doctrines. Perhaps all these phases are represented in 'La Comédie Humaine'; the novel according to Balzac is simply a universal instrument like Homer's epic or Shakespeare's drama. The ineffaceable mark of his achievement upon his successors is that, since Balzac, the novel in France is not a toy but a serious art. Balzac indeed would not have been content with the qualification; half the preface already referred to is an apology for the novel considered as a work of science and a means of propaganda, and to him — to his precept rather than to his practice — must be traced the arrogant pretensions of some modern writers of fiction, their sermons and sociology and what Flaubert so disdainfully called their *manie de conclure*. A work of imagination does not need the protection of a political creed or a scientific hypothesis; it is Balzac's weakest side that, while he sinks what we call his personality almost always, he frequently obtrudes fallible

opinions — matter for argument — into the domain of the imagination. His royalism is an interesting fact, but in his novels it is irrelevant; the same is true of many of his political prophecies. It should be added that he seldom intervenes directly in the discussion of scientific theories (which hold a somewhat important place in his novels), though with characteristic credulity he identifies himself expressly with the speculations of the phrenologists! There was a mystic in Balzac, and that section of his work, 'Philosophical Studies,' which deals with the solitary adventures of the mind in regions beyond the world of sense, is strangely original and fascinating.

He was, in some degree reluctantly, an artist — a prodigious though an imperfect artist. His defects of form have been exaggerated. His style, like Saint-Simon's, is vigorous and vivid in default of correctness, and full of fortunate phrases; but he was wanting in the sense of idiom, and the effort to condense his thought often produced a clumsy syntax and obscurity. Haste no doubt accounts for some base coinage, repetition and inadequate expressions. As of other writers of his stature it may be said of him that his fecundity was necessarily wasteful, so that a part of his work is greater than the whole. This exuberance, a certain worship of the excessive, a stupendous confidence for which no design is too large, and a preference for the expressive over the symmetrical, for color over draughtsmanship, are characteristics which he shares with several great Frenchmen of his generation — the generation conceived in camps and lulled by the guns of Austerlitz, which grew up haunted by a vision of heroical accomplishment. Honoré de Balzac stands beside Victor Hugo and Jules Michelet and Hector Berlioz and Eugène Delacroix — a giant among giants, a perennial force among the intellectual forces of the world. See PERE GORIOT; EUGENIE GRANDET; CÉSAR BIROTTEAU; MAGIC SKIN, THE.

**Bibliography.**—The best edition of the complete works of Honoré de Balzac is the 'Edition Définitive' (in 24 volumes, Paris 1869–76). Uniform with it are the letters to Mme. Hanska, 'Lettres à l'Etrangère,' posthumously published in 1899. There exist numerous English translations of individual novels. Prof. G. Saintsbury in the general edition of a complete English translation of a 'Human Comedy,' by various hands, in 40 volumes (London 1895–98). The letters to Mme. Hanska have been translated by D. F. Hannigan — 'Love Letters of Balzac' (London 1901). Among biographical and critical studies of Balzac the more valuable are the following: L. Gozlau, 'Balzac chez lui' (1862); E. Biré, 'Balzac' (1897); Le Breton, 'Balzac, l'homme et l'œuvre' (1905); F. Brunetière; 'H. de Balzac'; Vicomte Spoetboerch de Louvenjoul, 'Histoire des œuvres de Balzac' (1880); 'La Genèse d'un Roman de Balzac' — 'Les Paysans' (1901); 'Un pays perdu d'H. de Balzac' (1903). The short life of her brother by Mme. Surville (Laure de Balzac), first published in 1858, is included in the volume of the 'Edition Définitive' containing Balzac's general correspondence. In English Mr. Frederick Wadmore has written a 'Life of Balzac'; and a better-informed study by Miss M. F. Sandars appeared in 1904. Consult also Chapman, J. J., 'Great Genius' — including Euripides, Shakespeare, Balzac (New York 1915); Faguet, E., 'Balzac' (Paris 1913, and trans. with notes Boston 1914); Gillette, F. B., 'Title Index to the Works of Honoré de Balzac' (Boston 1909); James, H., 'Notes on Novelists' (New York 1914); Lilly, W. S., 'Balzac Re-Read' (*Nineteenth Century and After,* New York 1916).

F. Y. ECCLES.

**BALZAC, Jean Louis Guez de,** French essayist and letter writer: b. Angoulême 1597; d. 18 Feb. 1654. In his youth he was secretary to Cardinal La Valette at Rome. He returned to Paris, devoted himself to literature, and under Richelieu became councillor and historiographer of France, and was one of the most influential members of the Academy from its foundation, likewise a sort of oracle of the Hôtel Rambouillet. His influence on French prose is ranked with that of Malherbe on poetry. Besides his 'Letters' (1624), which are elaborate epistles with a definite attempt at style, he wrote 'The Prince' (1631), a glorification of absolute monarchy; 'The Dotard' (1648); 'The Christian Socrates' (1652); and 'Aristippus' (1658); the latter intended to portray the ideal statesman. His 'Letters' were edited by Larroque (1874).

**BALZANI,** bäl-tsä'-nę, **Ugo,** COUNT, Italian historian: b. Rome, 6 Nov. 1847. He received his education at the university of his native city. He soon became distinguished as a brilliant scholar in his chosen field of history and received many honors at home and abroad. He is president of the Reale Società romana di storia patria, member of the Reale Accademia dei Lincei and of the Instituto Storico Italiano. He received the honorary degree of Litt.D. from the University of Oxford and was elected a corresponding fellow of the British Academy. His publications include 'Le cronache Italiane nel Medio Evo,' 'Il Regesto di Farfa di Gregoriodi Catino' (1879); 'The Popes and the Hohenstaufen; 'Il "Chronicon Farfense"'; 'Sisto V'; 'Early Chroniclers of Italy' (1883); besides many contributions to the transactions of the various institutions, Italian and foreign, of which he is a member.

**BALZICO,** bäl-tsē'kō, **Alfonso,** the most prominent Italian sculptor of his time: b. at Cava di Tirreni, near Salerno, 1825; d. 1901. He received his early art education at the Academy of Naples, finishing his studies in Rome. For his royal patron, Victor Emmanuel I, whose capital was then at Turin, he produced his masterpiece in 1867, the equestrian statue in bronze of Duke Ferdinand of Genoa. His subsequent life was spent in Rome, which had become the national capital. His nude 'Cleopatra' received the gold medal at Paris in 1900, and among his other works are 'John the Baptist,' 'The Free,' the marble monument of 'Bellini,' the musical composer, and 'Victor Emmanuel' in bronze, the two latter in Naples.

**BAMBARRA,** bäm-bär'ra, west Africa, a negro kingdom, lying at the point where 5° W. long. and 12° N. lat. cross. It was first visited by Mungo Park. In the east the country is flat and swampy; but in the west there are low chains of granite hills. The climate in some parts is intensely hot, but generally healthful.

The land is well watered and fertile. The rainy season is from June to November. Cotton, maize, yams, corn, rice and many kinds of fruit are raised. The principal towns are Sego, Sansandin, Yamina and Bammako. Many local merchants are very wealthy, and a quite extensive trade is carried on, the natives working articles in gold, ivory and iron. In 1881 a treaty with the Sultan of Sego opened up the country to French traders. The region is a part of the French West African colony of upper Senegal and Niger. The inhabitants are heathens of mixed negro and Falah blood and belong to the Mandingo family. They number about 2,000,000, are a mild and industrious people, but, despite the fertile soil and their thrifty habits, they have been reduced to the direst poverty by their Mohammedan oppressors, the Toucouleurs.

**BAMBERG**, bäm'bĕrg, Bavaria, town in upper Franconia, on the navigable Regnitz (which here divides into two), three miles above its junction with the Main, partly on a plain, partly on hills, amid vineyards and gardens, and 30 miles north of Nuremberg. Its chief edifice is the Roman Catholic Cathedral, built in the 12th century, and forming one of the finest examples of the transition from the Romanesque to the Gothic style, with four towers, a noteworthy portal and interesting sculptures and monuments. Other buildings include the old palace or residence; another palace, formerly occupied by King Otto of Greece; the former castle of the prince-bishops of Bamberg, etc. The educational institutions include a college or lyceum, an old and a new gymnasium, a Roman Catholic seminary, an observatory, etc. There is a library containing 300,000 volumes, with valuable manuscripts and early printed books. There are manufactures of cotton and woolens, besides other industries, such as market-gardening and seed-growing, brewing, etc. The industries consist chiefly of the manufacture of beer, cotton, woolens, gloves, furniture, musical instruments, shoes and leather goods, tobacco, sugar, starch, etc. The city's government is in the hands of a municipal council of 42 members and an executive board of 19, elected by the former. The United States is represented by a resident consul. Pop. (1910) 48,063.

**BAMBERGER**, bäm'bĕrg-ĕr, **Heinrich von**, Austrian pathologist: b. Prague, 1822; d. 1888. He was graduated in medicine in 1847, and became professor of special pathology and therapeutics, first in the University of Würzburg, and in 1872 in the University of Vienna. Of his numerous publications, two have been held in particularly high esteem, 'On the Diseases of the Chylopoietic System' (1855), and 'Treatise on Diseases of the Heart' (1857).

**BAMBERGER, Ludwig**, German statesman: b. Mainz 1823; d. 1899. Born of Jewish parents, he was educated at Giessen, Heidelberg and Göttingen; took part in the revolution of 1849, condemned to death, went into exile and returned on the amnesty of 1866, and was a member of the German Reichstag 1873–80. He was an advocate of free trade, and on account of his opposition to Bismarck's economic policy, he left the National Liberal party and joined the "Secessionists," a group which later became a part of the German Liberal party. His publications include 'Monsieur de Bismarck' (of which there is an English translation); 'The Five Milliards'; 'Germany and Socialism', and a volume of reminiscences.

**BAMBINO**, bäm-bē'nō (Ital., "child"), the figure of our Saviour represented as an infant in swaddling clothes. The 'Santissimo Bambino' in the Church of Ara Cœli at Rome, a richly decorated figure carved in wood, is specially venerated and is often the object of impressive religious demonstrations.

**BAMBOCCIADES**, bäm-bŏch-ĭ-ädz', paintings generally grotesque, of common, rustic or low life. The name is derived from the nickname of Peter Van Laer, a Dutch painter of the 17th century, who, on account of his deformity, was called *bamboccio* (cripple). Teniers is the great master of this style.

**BAMBOO**, the common name of more than 200 species of about 20 genera of perennial, mostly tree-like, tropical and sub-tropical grasses unevenly distributed throughout the world, but more abundant in southern Asia, where 160 or more species are found from sea-level to altitudes of 10,000 feet or slightly more in the Himalayas; and next most plentiful in America, where there are about 70 species, some of which reach elevations of 15,000 feet in the Andes. Occasional specimens of the larger species attain a height of 120 feet and a girth of three feet. From the jointed root-stock the numerous jointed, usually straight and erect, but sometimes crooked or creeping stems grow without branches until the full height is reached, when a more or less dense thicket of horizontal limbs is developed, and the great panicles of flowers appear.

The number of uses to which these plants are put rivals that of the palms. In fact the various species can be utilized for man's every purpose. The light, elastic hard stems, hollow or slightly pithy, except at the points, which have strong partitions, are used for bridges, masts, poles, joists, fishing-rods, etc.; when the partitions are removed, for waterpipes; when sawed in sections, for pails (the natural partitions serving as bottoms), cooking-utensils, life-preservers, bows, arrows, quivers, walking-canes, flutes and smoking-pipes; when split, for nets, hats, fishing-rods, wicker-work and umbrellas. Parts of the leaves of some species are used for paper-making, thatch and hats; the young shoots of some are used as food, either boiled or pickled; the seeds, for food and for making a kind of beer; some of the spiny species are planted as hedges for defense against foes, animal and human.

Some species yield "Indian honey" (so called by the Greeks), the air-dried saccharine exudations from the nodes. Sometimes this substance is called *tabaris* or *tabasheer* (q.v.), which is properly a phosphorescent substance obtained from other species and from related grasses. Many of the species are of exceedingly rapid growth; even in greenhouses specimens have been known to attain a height of 20 feet in two months or even less time. In arid climates the bamboos are often of great value, since they are among the few plants that will grow in such places. Many species are cultivated for ornament, not only in warm countries, but in greenhouses. Some species thrive in climates where the thermometer does

not fall much below the freezing-point. In general the hardy species do best in deep, rich soil and warm situations protected from severe winter winds. The roots should be given a protective mulch of litter in autumn, and this should be allowed to remain during the summer as a moisture conserver. For an account of ornamental bamboo culture in greenhouses and out of doors, and of the ornamental species grown in America, consult Bailey, 'Standard Cyclopedia of Horticulture.'

**BAMBOO RAT**, a name given to several species of mole-rats, of the genus *Rhizomys*, found in the bamboo jungles of India.

**BAMBOROUGH** (băm'bŭr-ō) **CASTLE**, an ancient English castle on the coast of Northumberland, formerly with its connected estate the property of the Forsters, and forfeited to the Crown in 1715, both being purchased by Lord Crewe, bishop of Durham, and bequeathed by him for charitable purposes.

**BAMBOUK**, bąm-book', or **BAMBUK**, west Africa region in the French colony of Senegal, between the Falémé and Senegal rivers, between lat. 12° 30′ and 14° 30′ N.; long. 10° 30′ to 12° 15′ W., and estimated to be about 140 miles in length by 80 to 100 in breadth. Besides the Senegal, its tributaries, the Falémé and the Bafing (or upper Senegal), form its natural boundaries. A considerable part is somewhat rugged, though not very elevated, the highest points seldom exceeding 600 feet. The valleys and plains are remarkably fertile. The baobab, calabash, tamarind, with a variety of acacias and palms, reach the utmost limit of their fruitfulness; maize, millet, cotton and a multitude of leguminous plants grow almost without culture, and rice is produced in the lowlands, which are subject to inundation. Its unhealthiness, however, makes it almost uninhabitable by Europeans. The animals comprise lions and elephants, wild cattle, crocodiles, etc. Gold is found in abundance. It is carelessly worked, and is given to traders in exchange for salt, an article in great demand, and various other goods. Bambouk is more sparsely inhabited than formerly. The natives are Mandingoes and form a considerable number of communities or confederations more or less hostile to each other. They ostensibly profess Islam, but practically they are pagans and of a very ferocious disposition. The country has latterly been fully explored by the French, who are developing its resources and have constructed a railway along the Senegal from Kayes to Bafulabé. In the 15th century the Portuguese, allured by the fame of its gold, invaded Bambouk, but ultimately perished almost to a man, partly through intestine dissensions and debauchery, and partly by the weapons of the natives. It has been under French protection since 1858. Pop. about 800,000.

**BAMIAN**, bä-mę-än', a valley and pass of Afghanistan, the latter at an elevation of 8,496 feet, the only known pass over the Hindu Kush for artillery and heavy transport. The valley is one of the chief centres of Buddhist worship and contains two remarkable colossal statues and other ancient monuments.

**BAMMAKO**, bä-mä'kō. See BAMBARRA.

**BAMPTON LECTURES**, a course of lectures established by John Bampton, canon of Salisbury, who bequeathed certain property to the University of Oxford for the endowment of eight annual divinity lectures to be annually delivered. The subjects prescribed are the Confirmation of the Christian faith and the confutation of all heretics and schismatics; the divine authority of the Scriptures; the authority of the primitive Fathers in matters of Christian faith and practice; the divinity of Christ; the divinity of the Holy Ghost; the Apostles' and Nicene creeds. The lecturer must have taken the degree of M.A. at Oxford or Cambridge, and the same person may not lecture twice. The first course of lectures was delivered in 1780, and they have been delivered every year since, with the exception of 1834, 1835 and 1841. A list of the lectures will be found in the yearly 'Historical Register of the University of Oxford.'

**BAN**, bän, **Matija**, Slav poet: b. Dubrovnik, Ragusa, 1818; d. 1903. He received a good education in his native place, including a thorough knowledge of French and Italian. He traveled extensively in the Balkans, and in 1844 became tutor to the daughters of Prince Alexander Karageorgevitch at Belgrade. He was editor and publisher of the literary-scientific periodical *Dubrovnik* in the city of the same name in 1849–53. In 1854 he became instructor in French and Italian in the Belgrade Lyceum, but the adverse criticism on his ode addressed to the Sultan obliged him to resign this post and he thereafter devoted himself to literary pursuits and travel. His works include the Italian lyrics, 'Il terremoto di Ragusa'; 'Il Moscovito'; 'Radimiro'; 'The Woman's Educator' (3 vols., Belgrade 1847), written for the young princesses to whom he was tutor; a drama, 'Mejrima'; 'Various Songs' (1853), and the tragedies 'Dobvilo et Milenka'; 'Tsar Lazar'; 'The Death of Prince Dobroslav'; Jan Hus' (1884); 'Martha the Statholder; or, The Fall of Novgorod the Great' (1881).

**BAN**, the title of the governors of certain military districts in the eastern part of Hungary, corresponding to the German title of margrave. The ban is nominated by the king, renders an oath to the Diet, and formerly had very extensive powers, exercising an almost absolute authority in the political, judicial and military affairs of his district. The progress of Turkish conquests after the unfortunate battle of Mohacs in the 16th century extinguished the most of the banats, and there remains now only the banat of Temesvar, the ban of which is the third great dignitary of the Hungarian kingdom and has the title of ban of Croatia.

In Teutonic history the ban was an edict of interdiction or proscription: thus, to put a prince under a ban of the empire was to divest him of his dignities and to interdict all intercourse and all offices of humanity with the offender. Sometimes whole cities have been put under the ban; that is, deprived of their rights and privileges.

**BANA**, bä'nạ, in Hindu mythology, a thousand-armed demon or giant who was the enemy of Vishnu, but the friend of Siva.

**BANAK**, or **BANNOCK**, an Indian tribe of Idaho. Its territory formerly extended over

southern Idaho and eastern Oregon; but the tribe is now concentrated on the Fort Hall and Lemhi reservations, Idaho. Those of the latter reservation are confederated with the Shoshoni.

**BANANA,** bą-nä'ną, an island in west Africa, north of the mouth of the Kongo; also a seaport of the Kongo Free State, situated on the island. A few years ago the town was an important commercial station, but after the building of the railroad from Matada, and the establishment of an ocean steamship line direct to that place, Banana began to decline, and at last lost all its trading importance when the extensive Dutch firms formerly established there removed their headquarters to Kabinda and Kisanga, in Portuguese territory.

**BANANA.** A well-known, edible fruit produced by herbaceous plants of the same name, belonging to the genus *Musa* and sub-genus *Enmusa.* More than 60 species have been described, but four species are of special importance. *Musa sapientum,* which includes the majority of the bananas grown in the western hemisphere; *Musa cavendishii,* which is the species grown in the Canary Islands and in southern China, and *Musa acuminata,* the banana of the East Indies and Malay Archipelago. Here also should be mentioned *Musa paradisiaca,* the plant commonly known as the plantain and differing from the banana in taste and in composition.

The banana is supposed to be a native of the East Indies or Malay Archipelago, but was early introduced either by accident or design into the tropical regions surrounding the Caribbean Sea, and the fruit is now grown in large quantities in Central America, some portions of South America and the West Indies, and these regions constitute the main producing centres for the American trade and for a portion of the European trade. The banana is also an important crop in the Canary Islands, from which large numbers are shipped to the British Isles. It grows abundantly through the Pacific islands, the Malay region and the East Indies, and together with the plantain constitutes one of the main starchy foods of enormous populations in all these countries. The bananas of American commerce are largely of the "Gros Michel" type, as it is called, a variety of *Musa sapientum,* which produces a firm and finely flavored fruit with good shipping qualities. Red bananas are also grown in considerable quantities. Bananas form one of the principal articles of export from Costa Rica, Guatemala, Honduras, northern Panama, northern Colombia and from the island of Jamaica. Nicaragua, Mexico and Cuba also export bananas in large quantities. The total number exported from these regions amounts to from 40,000,000 to 50,000,000 bunches annually.

**Cultivation.**— Bananas are cultivated on a large scale in all these countries, differences in the methods of cultivation depending upon the soil and climatic conditions. In Central America a new plantation is usually developed from virgin forest in the river valley or coastal plain areas by first clearing out the undergrowth, lining and planting the bits or portions of root stalk used as seed, then felling the forest, which in these climates, with abundant rainfall, quickly undergoes decomposition, adding to the humus content of the soil. In the course of a few months the young banana plants will be several feet high and by that time the smaller twigs and branches will have broken down almost completely. Clearing the underbrush and growth of grass, weeds, etc., is then done and in a few months more the banana plants will have reached almost their full height and size and occasional cleaning will keep down the excess of wild growths. The banana plant is characterized by an underground root stalk on which occur buds or eyes, which grow out and up, thus forming a new aerial portion or sucker. Once the plantation is started, therefore, the continued development of these buds produces an over-supply of plants so that the weaker and less desirable ones are pruned out. In the course of time there results, therefore, a large mat of plants surrounding the spot where the single bit was planted. The banana plant does not possess a true stem above the ground, but the pseudo-stem consists of the basal portions of the leaf stalks, which overlap one another and are tightly pressed together, so that a trunk of from 8 to 15 inches in diameter when matured is produced. When the plant is fully matured, a bud forms in the root stalk, grows up through the centre of this mass of leaf stalks and finally emerges from the centre of the crown, this emergence being known as the "shooting." The bud gradually unfolds and a large number of clusters of flowers open up. Each of these clusters is protected in the bud by a thick overlapping bract. Only the upper clusters of flowers are fertilized and produce fruit, the lower ones withering and falling away. The number of clusters developing fruit is variable, generally running from 6 to 15. Each cluster is known as a hand and the individual fruits as fingers. When the fruit is approaching full development cutting takes place, as the fruit is never allowed to ripen on the plant. The bunch of fruit is removed and the plant which produced it is cut down to the ground, as each plant produces but a single bunch. By a proper selection and pruning of suckers the cultivations are, therefore, kept in almost continual production over a series of years.

**The Fruit.**— The fruit has a very agreeable flavor and taste and contains a large amount of starch and sugar, and is, therefore, of great value from the food standpoint. Analysis of the banana shows on the average 75.3 per cent of water, 1.3 per cent protein, 0.6 per cent fat, 22 per cent carbohydrate and 0.8 per cent ash. Analysis of the ash shows a high percentage of alkaline salts, so that from the food standpoint it is an extremely valuable food, especially for the production of quick energy. In calories the banana yields about 460 per pound, or approximately the same as green corn and higher than any other fresh fruit. Compared with potatoes, the analysis is nearly the same, being somewhat higher in fat and lower in protein, also slightly higher in carbohydrate. In calories the potato yields 385 per pound and the banana 460. Aside from use of the fruit in the raw condition, it may be used to advantage as a cooked vegetable.

**Other Uses of the Plant.**— The tree of the fruit-producing banana of commerce contains a certain amount of fibre which might possibly be utilized in the production of paper and

twine, although up to the present time this has never been developed commercially. The *Musa textilis* of the Philippines, a closely related species, constitutes the main source of the hemp used for cordage and in certain instances the thin leaf blades are used for wrapping purposes.

**BANANA-BIRDS,** any of several small West Indian insect and honey-eating birds that frequent the banana groves, especially the banana-quit (*Certhiola flaveola*) of Jamaica, whose pretty ways are described at length by Gosse in his books on the natural history of that island. One species (*C. bahamensis*) occasionally visits Florida. All these birds are brilliantly plumaged, usually rich blue with yellow markings, and represent the sun-birds (q.v.) of the Eastern tropics.

**BANANA-FISH.** See LADY-FISH.

**BANANAL,** bä-nạ-näl', also called SANTA ANNA, an island in Brazil, formed by the river Araguaya, in the province of Goyaz. Its length is 200 miles, breadth 35 miles. It is covered with dense forests, and has in its middle an extensive lake. Soil, fertile. Also the name of several small villages in Brazil.

**BANAS,** bạ-näs', a common name for rivers in India. The most important are: (1) a river of Shutia Nagpur, Bengal, having a northwest course of about 70 miles and falling into the Sone, near Rampur; (2) a river which rises in the Aravulli Mountains, and, after a southwest course of 180 miles, is lost in the Runn of Cutch; (3) a river of Rajputana, also rising in the Aravulli Mountains, flowing northeast through Mewar for 120 miles, then southeast and falling into the Chambal, after a total course of 300 miles.

**BANAT,** Hungary; Banat, term applied to any district ruled by a ban (q.v.). A large and fertile region, consisting of the counties of Temesvar, Torontal and Krassó-Szörény; principal town, Temesvar. The Banat is one of the most fertile and best cultivated districts of Hungary. Owing to its mild climate and rich soil, abundant crops of grain and fruits are raised, while the mountains contain rich mineral deposits, especially coal. Among its numerous mineral springs, the best known are those of Mehádia, in Krassó-Szörény County. The district, which from 1652 to 1716 was under Turkish dominion, became uninhabited and covered with forest and marshes, but was reclaimed under Maria Theresa, who drained the land by means of canals and by free grants of land induced a considerable immigration from Germany, Turkey and Serbia, thereby laying the foundations of its present prosperity. In 1779 it was united with Hungary. It was formed into an Austrian crownland in 1849 but was restored to Hungary in 1860. The population exceeds 1,500,000.

**BANBRIDGE,** Ireland, a market town in County Down, 22 miles southwest of Belfast, situated on the Bann. It has an Episcopal church in the Gothic style, and several other churches. It is a thriving seat of linen manufacture in all its stages, from the preparation of the soil for the flax seed to the finishing of the finest linen. Miles of bleaching-greens exist in the vicinity, while there are numerous factories along the Bann. Pop. (1911) 5,101.

**BANBURY,** England, a municipal borough and parish of Oxfordshire, on the river Cherwell and the Oxford Canal, 22 miles north of Oxford and 86 northwest of London by rail. Its strong castle, built about 1125, was demolished during the Great Rebellion, when Banbury was noted for Puritanical zeal. In 1469 the Yorkists were defeated in the vicinity. The town is still famous for its cakes and ale, as in Ben Jonson's day; and it manufactures webbing, agricultural implements and rope. Among the buildings are the parish church (1797) and the town hall (1854). Pop. (1911) 13,458.

**BANC** (Lat. *Bancus,* Ger. Bank, a bench), legally a seat or bench of justice, and in this sense has given rise to the expression in courts of common law, "sitting in banc," or *in banco* — that is, sitting together on the bench of the respective courts.

**BANCA,** bän'kạ, **BANKA,** or **BANGKA,** an island of the Malay Archipelago, Dutch East Indies, between Sumatra and Borneo; area, 4,446 square miles. Long and narrow in outline, and hilly in the north and south, the greater part of the area is heavily timbered. The climate is moist and unhealthful for Europeans, the rainfall averaging annually 120 inches. It is celebrated for its excellent tin, obtained in black alluvium in the north end of the island, about 25 feet below the surface, and of which the annual yield is as high as 20,000 tons. These mines are a government monopoly. Banca likewise yields iron, copper, lead, timber, sago, pepper, nutmegs, benzoin, etc. The population was estimated in 1913 at 113,653, of which less than 300 are Europeans and 35,000 Chinese.

**BANCA,** a boat used in the Philippines, made from a single log and furnished with an out-rigger.

**BANCO,** a term designating the money in which the banks of some countries keep or kept their accounts in contradistinction to the current money of the place, which might vary in value or consist of light and foreign coins. The term was applied to the Hamburg bank accounts before the adoption (in 1873) of the new German coinage. The mark banco had a value of 35.43 cents, but there was no corresponding coin.

**BANCROFT, Aaron,** Unitarian clergyman: b. Reading, Mass., 10 Nov. 1755; d. 19 Aug. 1839. He was graduated at Harvard in 1778; became pastor in Worcester in 1785, where he remained nearly 50 years. Besides a great number of sermons, his works include a 'Life of George Washington' (1807). He was the father of the historian, George Bancroft.

**BANCROFT, Cecil Franklin Patch,** educator: b. New Ipswich, N. H., 25 Nov. 1839; d. Andover, Mass., 4 Oct. 1901. He was graduated at Dartmouth in 1860; at Andover Theological Seminary in 1867, and at the University of Halle, Germany. He was ordained to the Congregational ministry in 1867, but has never held a pastorate. In 1873 he was made principal of Phillips Academy, Andover, Mass., and since then has sent more boys to colleges and scientific schools than any other American secondary school teacher. He

has frequently contributed religious and educational articles to periodicals.

**BANCROFT, Edward,** American naturalist and chemist: b. Westfield, Mass., 1744; d. 1820. In his youth he went to Guiana and there practised medicine. He afterward resided in England where he gained the friendship of Franklin, whose influence obtained for him a place on the staff of the *Monthly Review.* He published several strong articles in defense of American rights and in vindication of Franklin's connection with the 'Hutchinson Papers' episode. He was charged with arson in 1777, and was obliged to flee to Paris, where the American Commissioners employed him as a spy. It has been often charged, and without much foundation, that he obtained some information from his former teacher, Silas Deane, and sold it to the British government. In 1769 he published 'Natural History of Guiana', and in 1794 'Experimental Researches Concerning the Philosophy of Permanent Colors,' the first of a series on colors and calico printing. Parliament in 1785 granted him special rights for the importation and use of a certain kind of oak bark in calico printing. Consult Wharton, 'Diplomatic Correspondence of the American Revolution' (Washington 1889).

**BANCROFT, George,** American historian: b. Worcester, Mass., 3 Oct. 1800; d. Washington, D. C., 17 Jan. 1891. He was the son of Rev. Aaron Bancroft (q.v.), a Unitarian clergyman, and Lucretia Chandler Bancroft. He fitted for college at Phillips Academy, Exeter, N. H., entered Harvard College at the age of 13, and was graduated before reaching his 17th birthday. Edward Everett, then professor of Greek, having proposed that some young graduate of promise be sent to Germany for purposes of study in order that he might afterward become one of the corps of instructors, Bancroft was chosen, and in the summer of 1818 went to Göttingen, where two years later he received his degree of Ph.D. At Göttingen he studied German literature under Benecke; Italian and French literature under Artaud and Bunsen; Oriental languages and New Testament Greek under Eichhorn; natural history under Blumenbach; and the antiquities and literature of Greece and Rome under Dissen, an enthusiastic admirer of Plato, with whom he went through a thorough course of Greek philosophy. But his chief attention was given to history, which he studied under Heeren, the greatest historical critic of that day, and one of the most scientific of all historians. In choosing this special branch, Bancroft gave as a reason his desire to see if facts would not clear up theories and assist in getting out the true one. For a time he also studied at Berlin, where he was warmly received by the leaders in the academic world, notably Wolf, the editor of Homer; Schleiermacher and Hegel, to whom he brought tidings of their fame in the New World. In an extended tour through Germany and other countries he met Goethe at Jena, studied for a time with Schlosser at Heidelberg, formed an acquaintance with Manzoni at Milan and a life friendship with Chevalier Bunsen at Rome, where he also met Niebuhr. At Paris he was kindly received by Cousin, Benjamin Constant and Alexander von Humboldt. Returning to America in 1822 he served for a year as tutor in Greek at Harvard. In 1823, in conjunction with J. G. Cogswell, he established the famous Round Hill School at Northampton, Mass., a preparatory school far in advance of its time as to systems of study and classbooks. The teachers were good, the instruction inspiring and the students led a happy, healthy life, but the undertaking proved a failure financially. Bancroft withdrew in 1830, and Cogswell two years later. Many of their students afterward became men of national reputation or prominence, among them being J. L. Motley, Ellery Channing, G. E. Ellis and Theodore Sedgwick. Henceforward his career is best separated into political and literary. During the Round Hill years he had cut loose from the political traditions of the Harvard circle. In a public speech in 1826 he had avowed his principles to be for universal suffrage and uncompromising democracy, and at once became foremost in the councils of the Democratic party, though twice declining nomination or election to the State legislature. Van Buren appointed him collector of the port of Boston (1838–41) and his administration of the office won the praise of his political opponents. While collector he appointed Nathaniel Hawthorne and Orestes Brownson to offices within his jurisdiction. In 1844 he was defeated as the Democratic candidate for governor of Massachusetts, although he received more votes than any previous candidate of his party. In 1845 he became Secretary of the Navy under Polk. It was he who planned and established the Naval Academy at Annapolis, Md.; he gave the first order to take possession of California; and while Acting Secretary of War ordered General Taylor to march into Texas, thus ultimately leading to the annexation of that State. During 1846–49 he was Minister-plenipotentiary to Great Britain and there successfully urged upon the British ministry the necessity of adopting more liberal navigation laws. His reputation as a man of letters put the manuscript treasures of the great English families at his disposal and he combined his public duties with ardent historical researches. From 1849 to 1867 he lived in New York city, absorbed in literary work. During the Civil War he was a patriotic War Democrat and delivered a powerful speech effectually demolishing the Constitutional plea for slavery. Before both Houses of Congress he delivered a masterly eulogy on Lincoln. Appointed Minister to Prussia in 1867 he achieved a diplomatic triumph in bringing about the adoption of treaties in which England and Germany finally recognized the right of expatriation and abandoned their doctrine of «once a citizen, always a citizen.» In the northwest boundary treaty, negotiated by Polk, there was an ambiguity concerning a portion of the line. It was decided to submit the point to the German Emperor for arbitration. Bancroft prepared the whole American argument and the reply to the case of the British. The decision was unreservedly in favor of the United States.

His first publication was a volume of 'Poems' (1823), all European in theme. This was followed by books for the use of his students, translations of Heeren's 'Politics of Ancient Greece' (1824) and Jacobs' 'Latin Read-

er' (1825). His first article in the *North American Review* appeared in October 1823, and was a notice of Schiller's 'Minor Poems' with numerous translations. Thenceforward he wrote in almost every volume, but always on classical or German themes, until in January 1831, he took up 'The Bank of the United States,' and in October 1835 'The Documentary History of the American Revolution.' The two latter indicate the direction his historical studies had taken. Then came the beginnings of his great 'History of the United States,' the work which gave him his greatest fame. The first volume appeared in 1834, the second in 1837, the third in 1840, the fourth in 1852, the fifth in 1853 and so onward to the tenth in 1874. The earlier volumes were received with enthusiasm in America, pirated in England, translated into Danish, Italian, German and French, both with and without the author's permission. The 15th edition of Vols. I–III was issued in 1853. The design of the work was as deliberate as Gibbon's, and almost as vast and, like Gibbon, Bancroft lived to see his work accomplished. The history of the United States from 1492 to 1789 is treated in three parts. The first deals with 'Colonial History, 1492–1748.' The second part, 'The American Revolution, 1748–82,' is divided into four epochs called respectively: 'Overthrow of the European Colonial System, 1748–63'; 'How Great Britain Estranged America, 1763–74'; 'America Declares Itself Independent, 1774–75'; and 'The Independence of America Acknowledged, 1776–82.' The last part, though published as a separate work, entitled 'History of the Formation of the Constitution, 1782–89,' is really a continuation of the 'History.' The work is still the most popular and widely read of the larger American histories. Bancroft's materials and facilities for writing it were better and more extensive than any other writer on our Anglo-American history has enjoyed. His private collection of manuscripts and documents, original and copies (now in the New York Public Library), was by far the finest of his day in private hands, and superior to most institutional collections. His merits as a historian are positive and incontestable. For his subject he had a boundless and untiring enthusiasm, and he was permeated with that democratic spirit without which the history of the United States cannot be adequately written. Though his early style is justly open to the charge of being pompous, inflated and over-ornamented, it is essentially picturesque, and the earlier defects were greatly remedied by his successive revisions of the work. His command of his resources was masterly, and a far from favorable critic candidly admits that "one must follow him minutely through the history of the war for independence to appreciate in full the consummate grasp of a mind which can deploy military events in a narrative as a general deploys brigades in a field. Add to this the capacity for occasional maxims in the highest degree profound and lucid, and you certainly combine in one man some of the greatest qualities of the historian." It has been said that he made no effort to avail himself of the materials and results of other investigators, but nowhere does he claim finality for his work, and his later years were chiefly occupied in weaving into his narrative what he and no one else had. In 1876 he issued a Centenary edition in six volumes, upon which he had spent a solid year in revision. Again (New York 1884–87) he published what he termed the "author's last revision" in six volumes large octavo. In this he made considerable changes in arrangement and the subdivisions, all tending to a better ordering of the narrative. There were frequent omissions and condensations, and many repetitions and redundancies were cast out. These final changes have, in the judgment of good scholars, better fitted the work for permanent favor. It will remain necessary to the student until another historian, with equal or better facilities, shall rewrite the story in a way to gain wider sympathy. Present tendencies and methods in historical study and writing give little evidence that such another will soon arise. His lesser works include 'Poems' (1823); 'Literary and Historical Miscellanies' (1855); 'Memorial Address on the Life of Lincoln' (1866); 'Joseph Reed: a Historical Essay' (1867); 'A Plea for the Constitution of the United States Wounded in the House of Its Guardians' (1886); 'Necessity, Reality and Promise of the Progress of the Human Race' (1854); 'Oration, 4 July 1826, Northampton, Mass.'; 'Oration Before the Democracy of Springfield, Mass., 4 July 1836'; 'Address at Hartford, Conn., 18 Feb. 1840'; 'History of the Formation of the Constitution of the United States' (1882)); 'Oration Delivered at the Commemoration, in Washington, of the Death of Andrew Jackson, 27 June 1845.' To the 'American Encyclopædia' he contributed the article on Jonathan Edwards. Consult Green, 'George Bancroft' (1891); Wallis, 'Mr. Bancroft as a Historian' (1896); West, 'George Bancroft' (1900); Higginson, T. W., George Bancroft in 'Carlyle's Laugh, and Other Surprises' (Boston 1909); Howe, M. A. DeW., 'The Life and Letters of George Bancroft' (New York 1908); 'Report of Committte Charged with Placing the Memorial to Mark the Birthplace of George Bancroft' (*Proceedings* of the Worcester Society of Antiquity, Vol. XVII, pp. 269–292 Worcester, Mass., 1901); 'Oliver Hazard Perry and the Battle of Lake Erie' (Rhode Island Education Department, Newport 1912); Stippel, H. C., 'A Bibliography of Books and Pamphlets by George Bancroft' (On Howe's 'Life and Letters' of Bancroft, mentioned above, New York 1908); Bassett, John Spencer, 'The Middle Group of American Historians' (New York 1916).

GEORGE EDWIN RINES.

**BANCROFT, Hubert Howe,** American historian: b. Granville, Ohio, 5 May 1832; d. Walnut Creek, Cal., 2 March 1918. He worked on his father's farm and attended the academy until 16, when he entered as clerk a bookstore in Buffalo whose proprietor three years later sent him with a stock of books to open business in San Francisco where he arrived in March 1852. While building up a large bookselling and publishing business the young man became interested in gathering material for the history of this new and fascinating land, until his collections reached 60,000 books, maps and MSS., when he erected for it a library building on Valencia street. Here it

remained until it passed into the possession of the University of California at Berkeley. Ambitious at length to reduce this vast wealth of material to forms of practical utility, Mr. Bancroft put at work a dozen men to classify and extract the essential facts of history and development and place the results in his hands in proper form for writing a series of histories covering the western half of North America, from Alaska to Panama, as he had planned. This work covered a period of 30 years, and the result was the publication of the following series: 'Native Races of the Pacific States' (5 vols.); 'History of Central America' (3 vols.); 'History of Mexico' (6 vols.); 'North Mexican States' (2 vols.); 'California' (7 vols.); 'Arizona and New Mexico' (1 vol.); 'Utah and Nevada' (1 vol.); 'Colorado and Wyoming' (1 vol.); 'Northwest Coast' (2 vols.); 'Oregon' (2 vols.); 'Washington, Idaho and Montana' (1 vol.); 'British Columbia' (1 vol.); 'Alaska' (1 vol.); 'California Pastoral' (1 vol.); 'California Inter Pocula' (1 vol.); 'Popular Tribunals' (2 vols.); 'Essays' (1 vol.); 'Literary Industries' (1 vol.). Other and later works are 'Book of the Fair,' 'Book of Wealth' (1910); 'Resources of Mexico,' and 'The New Pacific'; 'Some Cities and San Francisco' (1907); 'Retrospection, Personal and Political' (1912).

**BANCROFT, Marie Effie Wilton,** LADY, English actress: b. Doncaster 1839. She is a daughter of Robert Pleydell Wilton. After acting as a child in the provinces, she first appeared in London 15 Sept. 1856 at the Lyceum, as the boy in 'Belphegor.' She was very popular in several boy characters, in burlesques at various theatres, and as Pippo in the 'Maid and the Magpie' at the Strand Theatre. She remained at the Strand until 1865, when with H. J. Byron she began the memorable management of the old Prince of Wales' Theatre with the production of the Robertson comedies. She secured Squire Bancroft as leading actor and the house soon became noted for its realistic presentation of the social life of the day. Among the successes of those years were 'Society' (1865); 'Ours' (1866); 'Caste' (1867); 'Play' (1868); 'School' (1869), and 'M. P.' (1870). Miss Wilton became Mrs. Bancroft in 1867 and regularly took the leading feminine rôles. Among the prominent actors presented at this theatre during the management of Mrs. Bancroft and Mr. Byron were Coghlan, Hare, the Kendals and Ellen Terry. They migrated to the Haymarket in 1880, and continued the production of modern comedy. Mr. and Mrs. Bancroft retired from the stage in 1885 and have rarely appeared since, a noteworthy occasion was the revival of 'Diplomacy' in 1893 at the Garrick. Mrs. Bancroft is joint-author of 'Mr. and Mrs. Bancroft On and Off the Stage' (1888); and sole author of 'A Riverside Story' (1890); 'My Daughter' (1892); 'A Dream' (1903); 'The Shadow of Neeme' (1912), and with Mr. Bancroft, 'The Bancrofts: Recollections of Sixty Years' (1909).

**BANCROFT, Richard,** English divine: b. Farnworth, Lancashire, 1544; d. 12 Nov. 1610. He was graduated at Cambridge University, where he received the degree of M.A. in 1570. He was ordained soon afterward and was appointed chaplain to the bishop of Ely, and in 1575 became rector of Teversham, Cambridge. In 1584 he was appointed rector of Saint Andrew's, Holborn, where his great abilities and zeal as a champion of the Church led to his rapid promotion. He became treasurer of Saint Paul's Cathedral in 1585, and the following year became a member of the ecclesiastical commission. On 9 Feb. 1589 he preached at Paul's Cross a sermon which was in substance a passionate attack on the Puritans, an assertion of the divine right of bishops, and urged the theory of the apostolic succession. In 1597 he was consecrated bishop of London and was present at the death of Queen Elizabeth. He took a prominent part in the conference of prelates and Presbyterian divines, held at Hampton Court in 1604, and in the same year became president of the Canterbury Convocation, at which he presented and caused to be passed a book of canons aimed at Puritanism and which forced many clergymen to give up their livings. It was set aside by Parliament two months later. In November 1604, he became archbishop of Canterbury, in which capacity he continued to show the same zeal and severity as before in suppressing heresy and schism. He involved himself in a struggle to make the ecclesiastical courts independent of the law by speciously magnifying the royal authority over them. In the last few months of his life he took part in the discussion about the consecration of Scottish bishops, and advised their consecration by bishops of the English Church. By this act were laid the foundations of the Scottish Episcopal Church. Bancroft was "chief overseer" of the authorized version of the Bible. While Bancroft's character was defective by his intemperate zeal, the Anglican Church owes its present constitution and firm position in the state largely to his labors. Consult Usher, 'The Reconstruction of the English Church' (New York 1910).

**BANCROFT, Sir Squire,** English actor: b. London, 4 May 1841. He was educated at private schools in England and France, and first appeared on the stage at Birmingham in 1861. He acted afterward in Dublin and at leading provincial theatres with all the prominent stars of the stage. He became leading man at the Prince of Wales' Theatre in 1865, in association with Effie Wilton, whom he married in 1867. For 20 years he was manager of the Prince of Wales' and Haymarket theatres, during which the modern revival of the stage was started. He retired from the management in 1885. He acted afterward with Irving in 'The Dead Heart' (1889) at the Lyceum, and in 'Diplomacy' at the Garrick in 1893. In 1897 he was knighted by Queen Victoria for notable services to his profession. He has devoted much time to "reading" for hospitals throughout the country, and is a member of Lord Chamberlain's advisory board for the licensing of plays. Consult 'Mr. and Mrs. Bancroft On and Off the Stage, Written by Themselves' (1888); and 'The Bancrofts: Recollections of Sixty Years' (1909).

**BANCROFT, Wilder Dwight,** American chemist: b. Middletown, R. I., 1 Oct. 1867. He was educated at Harvard and abroad, and obtained the degree of Ph.D. at Leipzig in 1892. He was instructor of chemistry at Harvard

1894–95; was appointed assistant professor of chemistry at Cornell in 1895, becoming full professor in 1903. In 1896 he founded the *Journal of Physical Chemistry* and became its editor. In 1905 he was chosen president of the American Electro-Chemical Society, and in 1910 of the American Chemical Society. He is a member of the Washington Academy of Sciences and of the Franklin Institute. Besides numerous articles in scientific journals, he has published 'The Phase Rule' (1897).

**BANCROFT, William Amos,** American street railway president: b. Groton, Mass., 26 April 1855. He was graduated from Harvard in 1878, elected mayor of Cambridge in 1893 and four times re-elected. He has held other public positions and has been trustee or director in many educational and financial institutions. He has been president of the Boston Elevated Railway Company since 1899; private to colonel, 5th Massachusetts Volunteer Militia; brigadier-general, United States Volunteers, Spanish War; chairman Republican State convention (1893); overseer, Harvard (1893–1905), and trustee, Phillips-Exeter Academy, Exeter, N. H., since 1902.

**BAND,** *in architecture,* any flat fascia or ornament which is continued horizontally along a wall, or by which a building is encircled. Bands often consist of foliage, quatrefoils or of simple bricks. Band of a shaft is the molding or suits of moldings by which the pillars and shafts are encircled in Gothic architecture. Several bands are often placed at equal distances on the body of the shaft, when it is long, in which case they are known as shaft-rings.

*As vestment,* bands are linen pendants from the neck, forming part of clerical, legal and academic costume. It is a moot question whether they are a survival of the amice or immediate descendants of the wide falling collar which was a part of the ordinary civilian dress in the reign of James I. In the Anglican Church they are seldom worn, except by ultra-low churchmen, but they are in common use with Presbyterian ministers (ordained ministers as distinguished from licentiates). Foreign Catholic ecclesiastics wear black bands with a narrow white border.

*In music,* a number of trained musicians in a regiment, intended to march in front of the soldiers and play instruments, so as to enable them to keep step as they move forward; also any similarly organized company of musicians, though unconnected with the army; an orchestra. The word is also applied to the subdivisions of an orchestra, as string-band, wind-band, etc. Until the 12th century there was no regular organization of the wandering or roving musicians, but early in the 13th century bands of pipers and trumpeters were formed, and later guilds were developed for the protection of the musicians. These guilds were subjected to and influenced by the peculiar restrictions defining the social status of every calling during the Middle Ages. It was not until the 18th century, however, that instrumental music had developed into the groups we know to-day. The full orchestra, combining every element and vehicle of musical expression, appealed to those of cultured musical taste; the brass band was suited to church and community music; and the military band appealed to the people at large. See BAND, MILITARY.

The modern so-called concert military band is a development of the brass band, giving special prominence to the wind-band. In many band compositions the strings are not used at all, the wind instruments being depended on for the interpretation of the piece. In order to secure the desired tone and color, new instruments have been invented and introduced. The concert military band has reached its greatest development in the United States, where it appears to have evolved from the Independence Day concerts held annually on Boston Common. These celebrations brought into prominence as a bandmaster Patrick Sarsfield Gilmore. The concert type has been further developed since his time by D. W. Reeves, Victor Herbert and John Philip Sousa. Sousa's organization is regarded as the highest type of concert military band. Its members are very carefully selected. It is modeled on the celebrated band of the French Garde Républicaine.

**BAND, Military,** an organized body of musicians in the army service. In all countries bands are organized and maintained in each infantry regiment, or battalion if the latter is the unit. The strength of these bands and the number and nature of their instruments vary considerably, as also do the rank and status of the bandmaster. Bands in the United States army are recruited generally for that specific purpose, the members being enlisted men, usually 28 in number. Instruments are supplied by the Quartermaster's Department, and a school for army bands is maintained at Governor's Island, N. Y. Bandmasters in England are specially trained at Kneller Hall, receive extra pay and are recruited from boys from military institutions, schools and training ships. The leading military bands of Europe are the Royal Artillery, Royal Marine and Guards' Band, of England; the Kaiser-Franz Grenadier Band, of Germany; the Guides' Band, of Belgium; the Garde Républicaine Band, of France; the Imperial Guards Band, of Austria; the Ottoman Palace Band, of Turkey; the Bersaglieri Band, of Italy; the Czar's Regiment of Guards Band, of Russia. Consult 'United States Army Regulations' for composition and equipment of United States army bands. For band instrumentation consult Clappé, A. A., 'The Wind Band and Its Instruments' (New York 1911). Consult also Grove, 'Dictionary of Music' (London 1903); Rode, 'Musikalisches Konversations-Lexicon' (Berlin 1877).

**BAND-FISH,** a genus in the family *Cepolidæ,* having the body much elongated and compressed, and is covered by very small scales. The dorsal fin is very long and consists like the anal of soft rays. The tail vertebræ are very numerous, and the whole structure of the body exhibits unusual delicacy, so that specimens are seldom obtained in an uninjured state. All the species inhabit quiet depths and are unable to contend with waves and currents. The snake-like form and the beauty of their colors make them objects of great interest. One species, the red band-fish (*C. rubescens*), not uncommon in the Mediterranean, is occasionally cast ashore by storms

on the British coasts. It is about 15 inches long. Its brilliant appearance, when seen moving in the water, has suggested the names of fire-flame and red ribbon, by which it is known at Nice. The home of the genus is in Japanese waters. See OAR-FISH.

**BAND-MEETINGS.** In early Methodism Wesley encouraged the system of bands. These consisted of not more than five or six persons of similar circumstances in life, and to some extent of similar taste, who met together to converse freely touching their Christian experience and their habits of life. The examination of personal character was very strict, and the intention was to promote a more holy and useful life. Each band met weekly for its own religious services; but they also occasionally met in general band-meeting. Band meetings, however, were not enjoined as a rule of discipline, and they were not at any time generally observed. In 1812 the Wesleyan conference endeavored to revive and extend their mission. In America these meetings were never organized to any great extent; they were held in a few of the cities and of the larger towns, but at present they are almost unknown.

**BAND SAW BLADES.** Owing to the increased value of timber in America more and more attention has been paid to the economical conversion thereof into the sawn product ready for market. The methods in use a few years ago were found to be wasteful and usually crude, and the product turned out of but an indifferent quality so far as sawing was concerned.

The attention of the operator being directed to band saw blades, these have come into quite general use for various purposes. A test of the band saw blade has proven its advantages to be so great that it has displaced not only the small scroll or "jig" saws for bracket sawing and ornamental scroll and curved work, but has also displaced reciprocating saws and circular saws for heavier work.

A band saw consists of a thin band or ribbon of steel with teeth cut in one edge, the two ends being welded together, making it continuous. When in use it is mounted on two wheels like a belt and made to travel at a rapid rate of speed by revolving one of the wheels. For scroll work its advantage over the reciprocating and jig saw lies mainly in the increased and uniform speed at which the saw blade travels which enables the operator to better control the work in hand and to feed the material toward the saw constantly, and thus to turn out more and better work than would be possible with a reciprocating saw cutting on the downward stroke only. Its narrower kerf also is more economical of lumber, particularly in resawing.

In sawing logs the advantage of a band saw as compared with a reciprocating saw may be judged when we state that the band saw blade travels at the rate of from 8,000 to 10,000 feet per minute, whereas a reciprocating saw making 200 strokes of 18 inches to the minute would only have a cutting speed of 300 feet per minute. The band saw traveling more than 20 times as fast as the reciprocating saw will naturally perform nearly or quite as much work as 20 reciprocating saws. The single reciprocating saw, because of its limited capacity, was succeeded by what is termed in the United States a gang, in Europe, a log frame, and in Canada a gate. The gang saw mill for log sawing consists of a sufficient number of reciprocating saws placed side by side in a frame to saw completely at the one operation an entire log. The advantage of the band log mill over the gang lies in its adaptability to the sawing of each log to the best advantage; as but one cut is made at a time, and as the face of the log is exposed to the view of the sawyer, he can judge through what portion of the log the next cut should be made to yield the best results. The circular saw turns out nearly or quite as much product as the band saw, but as it requires a much larger kerf, is far more wasteful and the finish given to the wood by the band saw is much superior. The success of the band saw is due, first, to the skill of the saw maker in turning out saw blades of a temper at once hard and tough, to retain a good cutting edge and at the same time flexible enough to pass over the wheels without cracking; second, to the skill of the saw filer in "fitting" his saws. Band saws require to be "tensioned" from time to time when in use, due to the fact that the saw stretches on the cutting edge by the continuous strain on the teeth. By the word "tensioning" is meant the expanding of the central portion and back of the saw blade either by the use of a hammer and anvil or by what are termed "stretching rolls."

The use of the band saw has brought forth an extensive line of saw fitting tools such as saw "swages" which are designed to expand the points of the teeth, "pressure side dressers" or "tooth formers" or "shapers" which are intended to give form to the swaged points of the teeth, automatic saw sharpeners, etc. With the use of these improved appliances it was found that thinner and thinner band saw blades could be used, and for "resawing" purposes, that is, the sawing of planks and boards into two or more thinner pieces, this is especially desirable. The plank or boards to be resawn are fed to the saw by means of rollers. Saws as thin as .02 of an inch in thickness are successfully used. Such saws remove a kerf of practically one thirty-second of an inch. In log mills the band saw blades are usually 12 inches in width and 49 feet long, of 14 gauge, and with teeth three-fourths of an inch long, and spaced 1¾ inches from point to point. The size of the gullet (between the teeth) must be abundantly large to hold all the sawdust gathered during transit through the largest diameter of log to be cut. Too small a gullet causes chattering of the saw. The strain put upon the saw is as much as the metal will bear and remain elastic, the object being to have the cutting edge rigid, and yet the band as a whole able to adjust the shock of a sudden obstacle, like a hard knot. For sawing very hard wood the teeth are shorter and spaced one-third more to the foot and have very little set. For cutting white pine and similar woods the gauges recommended for all widths of saw are as follows: Bands up to 14 feet long, 22 gauge; from 15 to 17 feet, 21 gauge; from 18 to 20 feet, 20 gauge; from 21 to 24 feet, 19 gauge; from 25 to 30 feet, 18 gauge. For hard woods like oak and beech, the thickness should be increased

one number on each length quoted, and the teeth spaced closer. For cutting metal the thickness is increased three numbers in the gauge and the teeth spaced about 20 points to the inch, with little or no set. Consult Grimshaw, R., 'Saw Filing and Management' (New York 1901); Johnson, C. L., 'The Saw Dictionary' (Seattle 1909).

**BANDA ISLANDS,** Dutch East Indies, a group belonging to Holland, in the Indian Archipelago, south of Ceram; the largest, Great Banda, being 12 miles long by two broad, while Goenong Api is an active volcano nearly 8,000 feet high. They have a rich soil admirably adapted for the cultivation of the nutmeg, which is their chief product, others being cocoanuts and sago. The total area of the group is about 19 square miles and the capital of the group is Banda, the seat of the assistant resident. It is well fortified and has a good harbor. Tatti wood is grown on the island of Rosingen. Pop. about 9,500, of whom less than 600 are Europeans. The islands were discovered in 1512 by the Portuguese, who were dispossessed by the Dutch in the 17th century.

**BANDA ORIENTAL,** bän'dą ō-rē-ĕn-täl, the name formerly given to that region east of the lower part of the Uruguay River, which is now included in the republic of Uruguay. See URUGUAY — HISTORY.

**BANDAGE,** a surgical wrapper applied to some part of the body. Bandages are employed for a variety of purposes. One of their chief uses is to secure dressings or splints. Another is to give support to a limb or to restrain its movements, or to exert pressure upon it so as to aid in restraining bleeding at some point; or a bandage may be used to promote healing, as in the case of ulcers, or to aid in the removal of swelling. In these latter cases the bandage must be applied with a considerable degree of tightness, and great care must be exercised that it be evenly put on, and that the tightness with which it is drawn does not give rise to disturbances of the circulation by undue and irregular pressure. Suppose, for instance, the arm is being bandaged from the hand well up over the upper arm. The arteries which carry the blood down the limb are for the most part deeply seated and well protected by muscles, so that they are practically unaffected by any ordinary degree of pressure on the surface. But many of the veins which carry the blood back to the heart up the limb run immediately under the skin, and will be pressed upon considerably by a bandage applied round the arm. If the bandage is made too tight at the elbow, say, the veins will be compressed and the blood will flow less easily along them at that point than it does lower down where the pressure is less. The consequence will be that the blood will be hindered in passing up from the hand; and as blood is all the time being carried down to the hand in the arteries, which are unaffected, the veins in the forearm and hand will become swollen and gorged with blood. The pressure of blood in the veins will become so great that fluid will be pressed out of the finer vessels into the surrounding tissues, and the hand will become swollen, puffy and dropsical, while much pain will be experienced. If the tight turns of the bandage are now loosened the veins will again offer a free passage to the blood and the swelling and pain will gradually subside. The proper method in such a case is not necessarily to bandage loosely, but to bandage uniformly, beginning with the requisite degree of tightness at the very extremity of the limb and continuing evenly and regularly upward. A general rule in bandaging a limb, then, is: Never let the bandage be tighter up the limb than it is at the extremity; apply it firmly and evenly at the extremity and carry it up uniformly. To this may be added, as a second rule, that if a bandage requires to be tightly applied in the course of a limb it must be begun at the extremity. It is specially necessary to follow these rules when the bandage is applied to secure a splint, since it must be tight enough to keep the splint in accurate position, or to keep a pad firmly applied over a wound for the arrest of bleeding. Bandages usually consist of strips of unbleached or bleached calico, linen, flannel, muslin, etc. Elastic bandages and india-rubber bandages are also in use for particular cases. The material should be torn into strips of the requisite breadth and the bandages should have no hem or edging, as this would prevent them stretching equally in all directions. The strips should be rolled up for use into firm rollers, a roller bandage being usually six yards long, though often more. They are of different breadth, most commonly 2½ or 3½ inches. For the chest and abdomen the breadth should be 4½ inches; for the fingers three-quarters of an inch. The triangular bandage (Esmarch's) is of all others the one made use of for rendering temporary aid in cases of accident, and, through the training afforded by "first aid to the injured" associations, is now familiar to almost everyone. The bandage is made of a square yard of linen or calico halved diagonally, each half having of course two sides 36 inches in length, with a base of fully 50 inches. When it is desired to exert very considerable pressure upon a part for a length of time, or when it is desired to keep a limb or a joint motionless for some time, this may be done without the use of splints by stiffening the bandages with starch or plaster of paris.

**BANDAI-SAN,** bän'dī-sän', Japan, a volcano on the island of Nippon, 140 miles north of Tokio. Its summit consists of several peaks, the highest of which is 6,035 feet above the ocean and 4,000 feet above the surrounding plain. On 15 July 1888 there was a terrible explosion of steam which blew out a side of the mountain, making a crater more than a mile in width and having precipitous walls on three sides. The débris of broken rock and dust poured down the slope and over an area of 27 square miles, killing 461 persons and covering a number of villages.

**BANDAJAN,** a pass over a range of the Himalayas, in Cashmere, 14,854 feet above sea-level.

**BANDANA,** a cotton handkerchief, having a dark ground of turkey-red, blue or purple, variegated with simple patterns of white or bright yellow, their bright colors making them a favorite head-covering for Southern negro women. Originally manufactured in the East Indies, the beauty and durability of their colors

caused such a demand that the manufacture of them was established elsewhere. The process is first to dye the cloth a dark color, commonly turkey-red, which serves as a ground. The white spots constituting the pattern are afterward produced by discharging the color with a solution of chlorine. In order to confine the discharging fluid to the exact points to be operated upon, the pattern is cut out in leaden plates, upon which the fluid will not act, and as many handkerchiefs or pieces of cloth as are to be operated upon are enclosed between pairs of these patterns and subjected to enormous pressure, the discharging fluid being run in at the top and prevented by the pressure from spreading, so that the pattern is brought out clean on the spots subjected to the action of the fluid.

**BANDE NOIRE,** bänd nwär, an appellation given during the French Revolution to companies of capitalists and speculators who bought up the forfeited estates of the Church and nobility. They were considered by many as hordes of vandals bound to destroy the monuments which kings, nobles and religious orders had erected all over France; and thence the scornful denomination, which was continued nearly up to 1830. But while the Bande Noire removed some castles and monasteries which ought to have been preserved as relics of art and religion, they did much toward the prosperity of the country by improving unproductive lands and disseminating among the people landed property which previously was concentrated in the hands of privileged classes. The term was originally applied to a body of German soldiers who were employed in the Italian wars by Louis XII of France, and who received the name from carrying black colors after the death of a favorite commander. The appellation was also assumed for the same cause by different Italian and French troops in the 16th century.

**BANDED PEAK,** or **MOUNT HESPERUS,** a summit of the San Juan Mountains, in southern Colorado; altitude, 12,860 feet.

**BANDELIER,** bän-dĕ-lēr, **Adolph Francis Alphonse,** American archæologist: b. Berne, 6 Aug. 1840; d. Madrid, 19 March 1914. Settled early in the United States, where he did important work under the direction of the Archæological Institute of America. His studies were chiefly among the Indians of New Mexico and Arizona, Central America, South America and Mexico. Returning to New York in 1903 he was engaged for the remainder of his life in preparation of works on the history and archæology of Spanish America. He is also the author of 'Art of War and Mode of Warfare' (1877); 'Social Organization and Government of Ancient Mexicans' (1878); 'Tenure of Lands and Inheritances of Ancient Mexicans' (1878); 'An Archæological Tour into Mexico' (1885); a novel of Pueblo Indian life 'The Delight Makers'; 'The Gilded Man and Other Pictures of the Spanish Occupancy of America' (1893). He contributed over 60 articles to the 'Catholic Encyclopedia,' etc.

**BANDELLO,** bän-dĕl'ō, **Matteo,** Italian novelist: b. Castelnuovo about 1480; d. 1561. He studied at Rome and Naples and applied himself almost exclusively to polite literature. In his youth, he was a Dominican monk, and was entrusted with the education of the celebrated Lucrezia Gonzaga. After the battle of Pavia he was banished from Italy as a partisan of the French, and Henry II of France gave him in 1550 the bishopric of Agen. He left the administration of his diocese to the bishop of Grasse, and employed himself, at the advanced age of 70, in the completion of his novels, of which he published three volumes in 1554; a fourth was published in 1573, after his death, which took place in 1561. He also published some poems. His novels are in the style of Boccaccio and are characterized by even greater license. His stories, together with the introductory notes, afford a valuable insight into the social customs of his age. Byron, Lope de Vega and Massinger availed themselves of much of his material. Consult Masi, E., 'Matteo Bandello o vita italiana in un novelliere del' 500' (Bologna 1900). Bandello's tales were edited by J. Payne (London 1890), and the 'Novelle' by Brognoligo (6 vols., Bari 1910–12).

**BANDERAS, Rio de,** a river of Mexico, on the east coast; so called (river of flags) because when discovered in 1518 by Juan de Grijalva, the natives waved white flags at the end of their spears in token of friendship.

**BANDETTINI,** bän-dĕt-tē'nē, **Teresa,** Italian poet: b. Lucca, 12 Aug. 1763; d. 1837. Beginning life as a danseuse, she discovered her poetic talent as if by accident, and came to be known and honored in most parts of her country. She was especially gifted in improvising verse. She was called the Amarilla Etrusca. Of her finished poems there remain 'La Morte de Adanoide'; 'Il Polidoro'; 'La Rosmunda'; and some shorter pieces.

**BANDICOOT.** (1) A large dark-colored rat (*Nesokia bandicota*) of southern India and Ceylon, where it is known as the "pig-rat" on account of the taste of its flesh, which is a favorite article of food among the natives of the dry hilly districts it frequents. As its food is chiefly grain and roots it does much harm to gardens; and it is also destructive to poultry. It has the habit of storing rice in its underground nests against the famine of the dry season. (2) In Australia, a small marsupial with long, narrow head and muzzle belonging to the family *Peramelidæ*. Many species are scattered throughout Australasia. They live in warm nests underground, and feed upon insects, worms and vegetable food. The hare-like marsupials of the closely allied genus *Perogale* are known as rabbit-bandicoots, and, like the other, frequently injure vegetable gardens. Consult Gould, 'Mammals of Australia' (London 1863).

**BANDIERA,** bän-dĭ-ā'ra, **Attilio** and **Emilio,** two brothers of a Venetian family, lieutenants in the Austrian navy, who attempted a rising in favor of Italian independence in 1843. The attempt was a failure, and they fled to Corfu; but, misled by false information, they ventured to land in Calabria with 20 companions, believing that their appearance would be the signal for a general insurrection. One of their accomplices had betrayed them, and the party was captured at once by the Neapolitan police. Attilio and Emilio were shot, along

with seven of their comrades, in the public square of Cosenza, 25 July 1844.

**BANDINELLI,** bān-dē-nĕl'-lē, **Baccio, or Bartolommeo,** Italian sculptor: b. Florence 1493, the son of a goldsmith; d. 1560. He learned his art under the sculptor Rustici, but modeled his style after that of Michelangelo, whom he vainly attempted to rival and whom he hated with life-long hatred. He was patronized by the Medici, and in honor of the presence of Leo X in Florence he executed the model of a colossal statue of Hercules which was intended to surpass the David of Michelangelo. Another work of his was an inferior copy of the Laocoon group for Francis I. He produced also Hercules and Cacus (at Florence), a somewhat heavy work, 88 figures of apostles, prophets and saints in the choir of the cathedral at Florence, a Bacchus, an Adam and Eve in the Bargello, etc.

**BANDIT** (It. *bandito*), originally an exile, banished man or outlaw; and hence, as persons outlawed frequently adopted the profession of brigand or highwayman, the word came to be synonymous with brigand. Of all European countries Italy has perhaps been most infested with banditti. They used to form a kind of society of themselves, subjected to strict laws, and living in open or secret war with the civil authorities. Peter the Calabrian, the most terrible among these robbers, in 1812 named himself, in imitation of the titles of Napoleon, "emperor of the mountains," "king of the woods," "protector of the conscribed," and "mediator of the highways from Florence to Naples." The government of Ferdinand I was compelled to make a compact with this bandit. One of the robbers entered the royal service as a captain in 1818 and engaged to take captive his former comrades. Subsequently adventurers of all kinds united with them. The Austrian troops which occupied Naples were obliged to send large detachments to repress them. The bandits used to exact from strangers and natives a sum of money for protection, and give them in return a letter of security. In Sicily the Prince of Villa Franca declared himself, from political and other views, the protector of bandits; he gave them a livery and treated them with much confidence, which they never abused. Banditti are still active in Italy, Sicily, Turkey and elsewhere.

**BANDOLIER,** a large leathern belt or baldrick, to which were attached a bag for balls and a number of pipes or cases of wood or metal covered with leather, each containing a charge of gunpowder. It was worn by ancient musketeers, and hung from the left shoulder under the right arm with the ball bag at the lower extremity, and the pipes suspended on either side. The name is now given to a similar belt in which cartridges are carried.

**BANDON,** Ore., city in Coos County, at the mouth of the Coquille River, and 90 miles directly southwest of Eugene. Its manufactures include woolen goods, lumber, shooks, butter, cheese, condensed milk, railroad ties, poles and matchwood. It has two banks and an assessed valuation of $843,893. There are two schools embracing grades and high school. The principal buildings are the two local banks, schools, post-office, hotels, restaurants and hospitals. Bandon has also a shipyard and is a coast guard station. Pop. 2,500.

**BANDON,** a river of Ireland which rises in the Carberry Mountains, and at its mouth forms the harbor of Kinsale. Spenser describes it as "the pleasant Bandon, crowned by many a wood." It has a course of 40 miles, for 15 of which it is navigable to Innishannon, four miles below Bandon.

**BANEBERRY.** See ACTÆA.

**BANÈR,** bą-nār', **Johan Gustafsson,** Swedish general in the Thirty Years' War: b. 1596; d. 1641. He made his first campaigns in Poland and Russia, and accompanied Gustavus Adolphus, who held him in high esteem, to Germany. After the death of Gustavus in 1632 he had the chief command of the Swedish army, and in 1634 invaded Bohemia, defeated the Saxons at Wittstock, 24 Sept. 1636, and took Torgau. He ravaged Saxony again in 1639, gained another victory at Chemnitz, and in 1640 defeated Piccolomini. In January 1641 he very nearly took Ratisbon by surprise.

**BANEZ, Dominic,** theologian: b. 1528 in the Spanish province of Biscaya; d. 1604 at Medina del Campo. He made rapid progress in philosophy and theology at the University of Salamanca, where he had as teachers the famous Melchior Cano and Peter and Dominic Soto. In 1581 he was appointed professor in this university, which was then dividing the honors and prestige of the Sorbonne. He was recognized as one of the clearest and most acute interpreters of the 'Summa' of Saint Thomas, and his chief works were commentaries on the same. He took a prominent part in the controversy on divine grace, predestination, etc., in which he opposed the theories of Molina. For several years he acted as confessor to Saint Theresa, and at his command she wrote her spiritual treatise, 'Camino de Perfeccion.'

**BANFF,** bămf, Canada, popular pleasure resort in southwestern Alberta, on the Bow River and on the Canadian Pacific Railroad. It is picturesquely situated amid the scenery of the Rocky Mountains, and contains a boiling sulphur spring, swimming baths, a sanitorium and a fine hotel. These are all situated within the area of the Rocky Mountain National Park of Canada. Consult 'Banff in the Canadian Rockies' (Montreal 1900).

**BANFF,** Scotland, seaport and county town of Banffshire, at the mouth of the Deveron, 50 miles northwest of Aberdeen, on the Great North of Scotland Railroad. The town is well built, has clean, well-paved streets and contains Banff Castle, an academy, town hall, a museum and several libraries. In the neighhood to the south is Duff House and park, the seat of the late Duke of Fife, who in 1906 presented the house and the portion of the park surrounding it (about 140 acres) to the towns of Banff and Macduff. There is a seven-arch bridge over the Deveron, uniting Banff with the seaport of Macduff. The principal manufactures are beer, leather, woolens and iron goods. Agricultural products, grain, cattle, salmon and herrings are exported. The government is vested in a provost and council; and Banff, with Macduff, Elgin, Cullen, Inverarie, Kintore and Peterhead returns one

member to Parliament. Banff is a place of great antiquity, its first charter having been granted by Malcolm IV in 1163, and further privileges were conferred by Robert Bruce in 1324 and Robert II in 1372. Archbishop James Sharp was born here in 1618. Consult Cramond, 'The Annals of Banff' (Aberdeen 1893). Pop. (1911) 3,821.

**BANFFSHIRE,** Scotland, a county in the north, bounded on the north by the Moray Firth, on the west by the county of Elgin and part of Inverness, on the south and east by the county of Aberdeen. The soil is for the most part a rich loam or deep clay. The principal rivers are the Spey and Deveron, with the Isla, a tributary of the former, and the Avon and Fiddich of the latter; besides which there are many other main and tributary streams. The mountains rise in altitude as they recede from the sea, the most celebrated being Cairngorm, which is 4,095 feet high. The principal crops are barley, oats, turnips and potatoes, little wheat being raised. Special attention is paid to the cultivation of turnips, the chief object of the farmer being the rearing and feeding of cattle. The total area of Banffshire is 410,000 acres. Nearly two-fifths of the total surface is under cultivation, and about one-fifth is occupied by woods and plantations. Since about the middle of the 19th century large tracts of formerly waste land have been reclaimed. Fishing is a staple industry. The salmon caught in the Spey and Deveron constitute an important article of traffic, the valued rental of the Duke of Richmond's salmon fishings in the former being over $60,000 a year. Banffshire possesses several woolen factories, tanneries, rope and sail works, ship-building yards, breweries, lime works and many distilleries, the whiskey being generally known under the name of Glenlivet, after a glen in the county. Among the natural productions limestone is the most prevalent. Serpentine also abounds in several places, especially at Portsoy, where it is known as "Portsoy marble"; it is wrought into vases and other ornaments. Ironstone and manganese also occur, and Scotch topazes or cairngorm stones are found on the mountains in the south of the county. The chief towns and villages are Banff, Macduff, Keith and Buckie. Pop. (1911) 61,402.

**BANFFY, Baron Desiderius,** Hungarian statesman: b. Kolozsvar, Hungary, 1844; d. Budapest, 23 May 1911. He went into politics as a partisan of Koloman Tisza, who gave him an official post in 1875. In 1883 he was appointed administrator of the Bistritz-Naszod district, where he actively pursued the policy of Magyarising the non-Magyar inhabitants. He became president of the lower House of the Hungarian Reichstag in 1892 and Prime Minister in 1895. In that capacity he secured the passage of the civil marriage and divorce bills in the face of violent clerical opposition, and renewed the Ausgleich with Austria, but it was not ratified by the Austrian legislature; and, as he had meanwhile won a general election by official pressure unparalleled even in Hungary, he encountered still more strenuous opposition and was replaced by Herr von Szell in 1899. Most of Banffy's followers were defeated in the 1901 elections; but he returned to public life in 1903 and took a very active part, as an extreme Nationalist, in combating Count Tisza during the latter's premiership in 1904–06. The elections of 1906 left him with only 11 followers, most of them more or less independent, and from then till his death he took but little part in politics.

**BANG,** a drink. See BANGUE.

**BANG,** bäng, **Bernhard Laurits Frederik,** Danish scientist: b. 1848. He is professor of pathology and therapy in the Royal Veterinary and Agricultural College, Copenhagen. He has made extensive researches in veterinary science, especially in regard to contagious abortion and tuberculosis. In 1892 he originated his method of eradicating tuberculosis from dairy herds by isolating mildly affected animals and artificially feeding their calves with milk free from tubercle bacilli. The results have been favorable in Denmark, Norway and Sweden. In 1896 Bang, in conjunction with Stribolt, discovered the cause of contagious abortion in cattle, and has since devoted much study to its treatment and the possibility of immunizing herds. He has published many articles on professional topics in the leading veterinary and other scientific journals of the world.

**BANG, Hermann Joachim,** Danish novelist: b. on the island of Seeland 1857; d. 1912. Bang first came into literary notice about 1879, since which time he has published a number of novels and some poems. 'Hopeless Generations' (Haablose Slœgter); 'Eccentric Tales' (Excentriske Noveller); 'Under the Yoke' (Under Aaget); 'Ten Years' (Ti Aar); and 'By the Roadside' (Ved Veien), are the titles of some of them. The last named is considered the masterpiece. A collection of his works, edited by Etta Federn, has been published in German (1910).

**BANG, Peder Georg,** Danish jurist and statesman: b. Copenhagen 1797; d. 1861. He became professor of law at the University of Copenhagen in 1830 and took an active interest in politics, holding several offices in his native city and becoming several times Minister of Agriculture and Minister of the Interior. In 1854 he became Prime Minister, and later was Supreme Court justice. He published 'Lārebog i de til den romerske privat Ret henhörende Discipliner' (2 vols., 1833–35), and 'Systematisk Fremstilling af den danske Procesmaade', with J. C. Larsen (5 vols., 1841–43).

**BANGALORE,** bän-gą-lōr', Hindustan, a fortified town in the native state of Mysore, 70 miles northeast of Seringapatam. It stands on a plateau 3,000 feet above sea-level, and is divided into two parts, the old native town and the cantonments. The chief buildings are the government house (where the British resident lives), and the new public offices, the palace of the maharajah, the central jail, etc. There is a fine public pleasure-garden. In the old town stands the fort, reconstructed by Hyder Ali in 1761 and captured by Lord Cornwallis in 1791. Latterly the town has greatly prospered. There are manufactures of silks, cotton cloth, carpets, etc. Bangalore is noted for its salubrity. There are a number of European educational institutions, and the chief, the high school of the province, is well attended. The military cantonment, housing a

large British and native force, is to the northeast. Pop. (1911) 189,485.

**BANGE,** bänzh, **Valerand de,** French artillery colonel; b. Balignicourt 1833. In 1873, as director of the atelier-de-précision in the Central Dépôt at Paris, he reconstructed both the light and heavy field pieces of the day, and his models were adopted by the French army in 1879. In 1884 he was the successful competitor with Krupp for the contract to supply field pieces to the Serbian government. In 1882–89 he was director of the Cail corporation, whose establishments at Denain, Douai and Grenelle he converted into ordnance factories. His gun has been preferred also by England, Sweden and Italy. In 1885 at the Antwerp Exposition he made a 13¼-inch gun, 35 feet long, from which were fired two projectiles of 1,320 pounds, employing charges of 440 pounds of powder, and with a range of about 12 miles. The gun burst at the third discharge. He was the first to employ effectively the screw principle in the mechanism of the breech block, and his gas check, which prevents the escape of gases, is now generally used in all guns of the screw breech-block type. See ORDNANCE. Consult Hennebert, 'L'Artillerie Krupp et l'artillerie de Bange' (1886).

**BANGKOK,** or **BANKOK,** Siam, capital of the kingdom, extending for three or four miles on both sides of the Menam, which falls into the Gulf of Siam about 15 miles below. It consists of three parts — the town proper, the floating town and the royal palace. The town proper occupies an island seven or eight miles in circuit, and is surrounded with walls and bastions; situated in the midst of gardens and luxuriant foliage, it presents a very picturesque appearance. The floating town consists of wooden houses erected on bamboo rafts moored to the bank in rows eight or more deep The palace, occupying an island in the river, is surrounded by high walls. Though the general character of the buildings is not imposing, numerous temples, glittering with gilding and terminating in lofty spires, are seen in many quarters. The approach to Bangkok by the Menam, which can be navigated by ships of 350 tons' burden (large sea-going ships anchor at Paknam, below the bar at the mouth of the river), is exceedingly beautiful. As the town is neared, numerous temples present themselves, and floating houses become common, and finally the whole city, with its rich gardens and shining temples and palaces, bursts full upon the view. The royal palaces, noblemen's houses, monasteries and dwellings of Europeans are of stone, and much modern improvement has resulted in the extension of well laid-out streets, lined by brick houses, electrically lighted, and traversed by electric street railroads. Four lines of steam railroad connect with the provinces. The circumference of the walls of Bangkok, which are 15 to 30 feet high and 12 broad, is about 6 miles. Bangkok is the constant residence of the king. The palace is surrounded by high walls and is nearly a mile in circumference. It includes temples, public offices, accommodation for officials and for some thousand soldiers, with their necessary equipments, a theatre, apartments for a crowd of female attendants and several Buddhist temples or chapels. Several of the famous white elephants are kept in the courtyard of the palace. Throughout the interior are distributed the most costly articles in gold, silver and precious stones. The temples of Bangkok are innumerable, and decorated in the most gorgeous style, the Siamese taking a pride in lavishing their wealth on them. In the neighborhood of Bangkok are iron mines and forests of teakwood. The trade, both inland and foreign, is very extensive. The foreign trade of Siam centres in Bangkok and is mainly in the hands of the Europeans and Chinese. The chief exports, rice, sugar, pepper, cardamoms, sesame, hides, fine woods, ivory, feathers and edible birds' nests, have reached a total annual value of over $21,000,000. The imports are tea, manufactured silks, and piece goods, opium, hardware, machinery and glass-wares, valued annually at over $16,800,000. The United States has a resident consular agent. The population is about 500,000, nearly half of whom are Chinese, the others including Burmese, Annamese, Cambodians, Malays, Eurasians and Europeans. Bangkok was an unimportant river village prior to 1769, when it was selected by King Paya Tak for his capital.

**BANGOR,** Ireland, seaport town, county Down, situated on an acclivity on the south side of Belfast Lough, four miles northwest of Donaghadee and 12 miles east of Belfast. It consists of three principal and several smaller streets, and has an Episcopal church, a Methodist and a Roman Catholic chapel, and two Presbyterian churches; an endowed school, six national schools, a Protestant hall and a branch of the Belfast Bank. The male population is chiefly employed in seafaring pursuits, the females in hand-sewing in all its branches. It has manufactures of embroidered muslins and linen goods. Bangor is a favorite bathing resort. Bangor Abbey, a free school, taught by the monks, was founded by Saint Congall in 555 A.D., and had 3,000 students in the 9th century, when it was destroyed by the Danes. The parish church now occupies the site. Consult Healy, 'Ireland's Ancient Schools and Scholars' (1890).

**BANGOR,** Me., the chief city of eastern Maine, is a port of entry and the seat of Penobscot County. The city is on the west bank of the Penobscot River, across its affluent the Kenduskeag, and at the head of navigation, about 28 miles from Penobscot Bay. It is on the Maine Central, Bangor & Aroostook and several other railroads, with steam and electric lines radiating in all directions; is on the main line from Boston to Saint John and Halifax, and also has direct steamship connection with Boston, being the terminus of the Bangor Division of the Eastern Steamship Company. Bangor is 76 miles northeast of Augusta, 137 miles northeast of Portland and 246 miles from Boston. Pop. (1914), 26,061.

**Trade and Commerce.**— Situated near the geographical centre of Maine and at the head of navigation on the largest river of the State, Bangor occupies a highly favored position and one destined to be even more commanding with the growth and development of the expansive territory north and east and tributary to her. As the shire town of Penobscot County, as

the trade centre and shipping point of a large and rich agricultural section and for many thriving industrial communities; as a point of convergence for numerous important railway and steamship lines, and a consequent tarrying place for great numbers of tourists, sportsmen and commercial travelers; these together with the busy commerce of its port, the metropolitan character of its hotels and the compactness of its business section, give to the city a much more populous appearance than the given figures would indicate. Bangor has a fine harbor, easily accessible for vessels of large size. Although nearly 30 miles from the bay and 60 miles from the ocean, the tide rises about 17 feet, and there is a sufficient depth of water to float the largest of ocean steamships. The Penobscot River, whose waters unite with those of the bay of the same name, is a noble water highway, rising 300 miles away amid the mountains and forests of northwestern Maine. In the 8,200 square miles drained by the Penobscot there are 1,604 tributary streams indicated on the State map, and 467 lakes and ponds. Bangor is one of the greatest lumber markets in the North, there being tributary to the city the great forests of spruce traversed by the Penobscot and down which the logs are floated; and has every sort of manufactory of wood and allied products,—saw, planing, wood pulp, and molding mills; factories of furniture, carriages, trunks, valises, agricultural implements, boots, shoes and moccasins, clothing, dairy products, etc., with iron foundries, machine shops, shipyards, flour mills and pork-packing establishments. Ice-cutting is also an important industry, Penobscot ice being exceptionally pure.

**Manufactures and Industries.**— Bangor's manufacturing establishments number in the vicinity of 300, embracing about 100 different kinds of industries and employing several thousand hands. These figures are, however, inadequate to correctly portray the city's manufacturing interests, as many of the important establishments are outside the city's limits. Therefore, while the manufactures of these mills are purely Bangor products, the plants themselves and most of the employees belong properly to other towns. In recent years pulp and paper manufacturing has made great advance and numerous pulp and paper mills are now in operation along the Penobscot, from those of the Eastern Manufacturing Company at South Brewer to the immense plant of the Great Northern Paper Company at Millinocket.

In recent years diversified manufactures have been multiplying and many and varied are the products of these establishments. Here is located a trunk manufacturing establishment which shipped recently a whole trainload of trunks, the largest shipment of trunks ever made by one manufacturer in this country or the world. There are located here great wood-working plants from whence go all over the country the finest designs in interior decorations and architectural wood-working. The United States census of 1914 recorded 122 manufacturing establishments employing 1,614 persons, of whom 1,200 were wage earners, receiving $734,000 annually in wages. The capital engaged aggregated $3,450,000, and the value of the year's output was $3,557,000; of this, $1,605,000 was the value added by manufacture.

Bangor is a trade centre for eight counties, and is connected with their principal places by steam or electric roads, or by water communication.

**Banks, etc.**—Bangor has three national banks, two savings banks, two trust and banking companies, two loan and building associations and two marine insurance companies. There are two daily papers and several weekly and monthly publications. There is a Chamber of Commerce with attractive rooms at the city hall. The Kenduskeag, flowing through the centre of the city, is spanned by several bridges, and the city is connected with Brewer across the Penobscot by a bridge 1,300 feet long. A dam across the Penobscot just above the city furnishes water supply and power, the city owning both its waterworks and municipal lighting plant. The assessed property valuation of Bangor is $24,000,000.

**Buildings, etc.**— The city has a fine granite custom-house and post-office, the county courthouse which is a credit to the great county of Penobscot, of which Bangor is the shire town. Bangor's city hall — the Hersey memorial building — is an imposing edifice which reflects credit upon the city. Bangor suffered a $4,000,000 conflagration in 1911 but the city has wholly recovered and the new buildings are modern and substantial structures. The Bangor public library is one of the foremost institutions of its kind. The Bangor Auditorium Association has erected the largest building of its kind in the State, and here each fall are held the eastern Maine musical festivals. The Eastern Maine General Hospital is one of the important institutions here and Bangor is also the home of the Bangor State Hospital for the Insane. The Bangor Theological Seminary is a time-honored institution of learning, and only nine miles away, in the town of Orono, is the University of Maine, the law school of which is located in Bangor.

**Government.**— Bangor received a city charter 12 Feb. 1834. The city seal is typical, the rising sun in the background illustrating the Sunrise State, and the spruce tree in the centre portraying the great lumber interests, while in the immediate foreground are gear wheel, anchor and plow, emblematic of manufactures, commerce and agriculture. The government is vested in a mayor, who is elected annually, and a council divided into two chambers. The city has seven wards, and one alderman and three councilmen are chosen annually from each ward, the city government comprising the mayor, seven aldermen and 21 councilmen. Most of the appointments and administration offices are subject to the control of the mayor and city council.

**History.**— Bangor's present site was in the early days the camping-ground of the Tarratines, a famous tribe of Indians. It was in 1769 that Jacob Buswell, Bangor's first white settler, came here from Massachusetts. He was a hunter and boatbuilder, and established his home near the site of Saint John's Roman Catholic Church. The place was for a time known as Kadesquit, afterward as Condeskeag, and later as Kenduskeag. The locality had been visited by the French as early as 1605, and was one of the many places identified with the mythical

Norumbega. Kenduskeag plantation was only a small hamlet at the time of the Revolution and during the time when the British had control of the river the hardships were severe. At the instigation of Rev. Seth Noble, Bangor's first clergyman, the name of Kenduskeag was finally abandoned and Sunbury adopted. With the growth of the place the people became impatient of the plantation organization and delegated Parson Noble to proceed to the General Court at Boston and secure an act of incorporation. Minister Noble was a great lover of music, and the hymn tune of Bangor was such a favorite with him that that name was substituted for Sunbury and the act incorporating the town of Bangor was passed 25 Feb. 1791.

Bangor early gave attention to the matter of improving her transportation facilities, and she had her railroad when most of the proud cities of to-day knew nothing of such things. As early as 1836 her enterprising citizens built a railroad to Old Town, a dozen miles up the river, with a view of aiding the development of her natural resources; and this, one of the earliest railroads in America, prospered for nearly a third of a century. Not only did the city have one of the first railroads in the country but the pioneer iron steamship constructed in America was built to run to this port and bore the name Bangor. She was built in 1845 on the Delaware, her owners being the Bangor Steam Navigation Company of Maine, and she was designed for passenger and freight service between Boston and Bangor. Within recent years, through the enterprise of some of Bangor's public-spirited men, Aroostook County has been brought into direct railroad communication with Bangor through the construction of the Bangor & Aroostook Railroad, this system having numerous branches to important points in northern Maine, it having also absorbed the Bangor & Piscataquis Railroad. In recent years there has been no more important railroad enterprise inauguated in New England than that of the Bangor & Aroostook, and under its enterprising and progressive management it has become a potential factor in the development of Bangor and the immense territory stretching to the northward. Bangor business men, ever alert to adopt the newest methods, inaugurated in this city the first electric railroad in Maine and more recently electric roads have been constructed reaching Hampden and South Brewer on the south and Old Town and Charleston on the north. These electric lines bring Bangor and the territory immediately contiguous into close touch, and the benefits accruing therefrom are far-reaching.

Located as the city is, on the west bank of the imperial Penobscot, at its junction with the less pretentious Kenduskeag, the business is largely in the valley, while the surrounding heights afford picturesque sites for residences. The diversified aspect is heightened by the wealth of trees along the residential streets, and few localities are to be found with greater scenic attractions. From the highlands overlooking the city the view is particularly fine, the mountains which fill the eastern horizon making a fitting background to the picture. The Kenduskeag has, through much of its course, very precipitous banks, a notable illustration being the historic Lover's Leap, a mile above the city; and along this picturesque stream are innumerable gems of scenic beauty.

Bangor enjoys the unique distinction of being the only place of its size on the globe where salmon fly-fishing can be successfully practised within the city's limits, and in one season a Bangor lumber manufacturer brought to the gaff and successfully landed 27 salmon, aggregating 500 pounds in weight. The Bangor salmon pool, whence are taken all the salmon caught with a fly on the Penobscot, is situated about a mile above the city and just below the falls that span the river at the Bangor waterworks dam.

Bangor is the home of many sportsmen and is the headquarters in this section for sportsmen's supplies of all descriptions. Nearly all the parties of sportsmen who in the season visit the great wilderness of northern and eastern Maine make this their rendezvous and procure their outfits here. Moose and deer are multiplying rapidly as the result of wise game laws, and Maine is truly the sportsmen's paradise.

**Population.**— In the year 1800 the population of Bangor was 277. From 1830 to 1834 Bangor expanded rapidly and when in the latter year a city charter was adopted the population was about 8,000. The census for 1900 gave Bangor a population of 21,850; the population in 1910 was 24,803, and with the towns immediately environing, including the city of Brewer across the river, about 50,000.

**BANGOR**, North Wales, episcopal city and parliamentary borough, in Carnarvonshire, near the northern entrance to the Menai Strait, nine miles northeast of Carnarvon and 60 miles west of Chester. It consists chiefly of one principal street about a mile in length, nestling in a narrow valley, but there is also a higher and more modern quarter called Upper Bangor, overlooking the strait. Two miles to the west the Menai suspension bridge and Stephenson's famous Britannia tubular bridge one mile to the south span the Menai Strait. The principal public buildings are the cathedral, the bishop's palace, deanery house, University College of North Wales, training college for teachers, etc. Bangor is the oldest bishopric of Wales, having been founded by Saint Deiniol in 550 A.D. He built a cathedral, which the Saxons demolished in 1071, and the new edifice, completed in 1102, was destroyed by fire in 1402. The present structure was in building in 1496–1532; it is of cruciform design, 214 by 60 feet, and has a tower 60 feet in height. Modern improvements have been freely introduced. There are plants for gas and electric lighting and a free public library. There are numerous educational institutions, including the University College of North Wales. Independent, Baptist and Normal colleges. The municipality was incorporated in 1883. The chief local trade is through the Penrhyn slate quarries, in which 3,000 wage earners are employed. The annual fairs are thronged with buyers and sellers. The fact that the harbor is not suited to large vessels makes the trade by sea of small proportions. Pop. about 11,500.

**BANGOR**, Pa., borough of Northampton County, 15 miles north of Easton; on the Bangor and Portland and New Jersey Central railways. There are numerous slate-quarries, silk mills, machine shops, and the products of the

slate-mills, etc., find an extensive market. Bangor was settled in 1760 and incorporated in 1875. Pop. (1910) 5,369.

**BANGOR THEOLOGICAL SEMINARY** (Congregational). Originated with the Society for Theological Education, which was established in Portland in 1811 and chartered in 1812. The seminary was chartered by the legislature of Massachusetts, of which Maine was then a province, 25 Feb. 1814; opened at Hampden in 1816; removed to Bangor in 1819, and graduated its first class 2 Aug. 1820. It was founded to provide an educated ministry for northern New England, then frontier country and being rapidly settled. It was first formed on the plan of the English Dissenters' schools with two years' classical and two years' theological instruction. In 1827 it was reorganized on the American plan of a three years' theological course. It is governed by an independent board of trustees, having only a friendly though close relationship with the Congregational churches. It has a faculty of five and a librarian, besides a varying number of lecturers. It has real estate valued at $100,000, about $300,000 worth of productive endowment, including about $60,000 of scholarship funds, and $10,000 as fund for the board lectureship, the latter providing two courses of lectures on scientific and cultural subjects each year. An annual event of wide influence is "Convocation Week," consisting of four courses of five lectures by the foremost men of affairs, and free to the public. The seminary is open to students of any denomination and is largely patronized by other than Congregationalists. In the first 100 years of its history, just closing, it has graduated 935 men, educated for a year or more 320 others, furnished a very large proportion of the Congregational ministers now or in the past active in Maine, sent scores of ministers to the churches outside Maine and many missionaries to all quarters of the globe.

**BANGORIAN CONTROVERSY**, a controversy stirred up by a sermon preached before George I in 1717, by Dr. Hoadly, bishop of Bangor, from the text "My kingdom is not of this world" — in which the bishop contended in the most pronounced manner for the spiritual nature of Christ's kingdom. The controversy was carried on with great heat for many years and resulted in an enormous collection of pamphlets. See HOADLY, BENJAMIN.

**BANGS, John Kendrick**, American humorist and editor: b. Yonkers, N. Y., 27 May 1862. He was one of the founders of *Life*, and has long been famed for his light verse and humorous stories, among which may be mentioned 'Coffee and Repartee' (1886); 'New Waggings of Old Tales,' with F. D. Sherman (1887); 'The Idiot' (1895); 'Mr. Bonaparte of Corsica' (1895); 'Water Ghost and Other Stories,' 'The Mantel-Piece Minstrels,' 'The Bicyclers and Other Farces,' 'A Houseboat on the Styx,' and 'A Rebellious Heroine' (1896); 'The Pursuit of the Houseboat' (1897); 'Enchanted Typewriter' (1899); 'Uncle Sam, Trustee' (1902); 'Andiron Tales' (1908); 'The Foothills of Parnassus' (1914); and 'Lady Teazle,' a musical comedy version of 'The School for Scandal.' He became editor of *Harper's Weekly* in 1900, of the *Metropolitan Magazine* in 1903 and of *Puck* in 1904. See LETTERS TO DEAD AUTHORS.

**BANGS, Lemuel Bolton**, American physician: b. New York, 9 Aug. 1842; d. New York, 7 Oct. 1914. He was graduated from the College of Physicians and Surgeons in 1872; was professor of genito-urinary diseases in the Post-Graduate Medical School and Hospital of New York, and later at Bellevue Hospital Medical College, and was consulting surgeon to various hospitals in New York. He was president of the American Association of Genito-Urinary Surgeons (1895), and editor of the 'American Text-Book of Genito-Urinary Diseases,' etc.

**BANGS, Nathan**, American clergyman and author: b. Stratford, Conn., 2 May 1778; d. New York, 3 May 1862. He entered the Methodist ministry in 1801, preached for some years in Canada and removed to New York in 1810. In 1820 he became head of the Methodist Book Concern, which he reorganized thoroughly, paying off its debts, extending its business and putting it on a paying basis. He was also charged with the censorship of all its publications. In 1829 he declined the bishopric of Canada. He edited the *Christian Advocate* and the *Methodist Magazine;* was founder and secretary of the Methodist Missionary Society; president of Wesleyan University, Middletown, Conn., in 1841; and in pastoral work from 1842 until his retirement in 1852. His chief work was 'A History of the Methodist Episcopal Church, 1776–1840' (4 vols., 1839–42); others are 'Errors of Hopkinsianism' (1815); 'Predestination Examined' (1817); 'Original Church of Christ' (1836); 'State and Responsibilities of the Methodist Episcopal Church' (1850). Consult his life by A. Stevens (New York 1863).

**BANGUE**, or **BANG**, a drink much used throughout the East as a means of intoxication, prepared from the dried leaves of the Indian hemp, which are also called by this name. See HASHISH.

**BANGUED**, băn-gād', Philippines, the capital of the province of Abra, Luzon, 236 miles north of Manila. Pop. about 13,500.

**BANGWEOLO**, băng'wē-ō'lō (also called BEMBA), a great central African lake, discovered by Livingstone in 1868, which is 150 miles long by 75 wide, and 3,700 feet above the sea. The Chambeze, which flows into it, and the Luapula, which issues from it, constitute the head-stream of the Kongo. The shores are flat, and parts of the lake are mere marsh. In the northwestern part are four large islands inhabited by the Mboghwa, a race of fishermen and herdsmen. On its southern shore Livingstone died.

**BANIAN**, or **BANYAN** (from Sanskrit *banij*, a merchant), the name commonly given by Europeans to Hindu merchants, brokers, etc., in Bengal and western Hindustan. They are often men of great wealth and carry on most extensive dealings, their operations extending as far as the borders of the Russian and Chinese territories, the Persian Gulf and eastern Africa. They are great travelers and have counting-houses in almost every trading town of importance in Asia. English sailors call

*banian days* those days on which they have no flesh meat. Probably the name has a reference to the habits of this class; because, before people were acquainted with the abstinence of all the Hindus, it was thought to be confined to the Banians.

**BANIAN TREE.** See BANYAN.

**BANIM,** bā'nĭm, **John,** Irish writer: b. 1798; d. 1842. He early exhibited a taste for literature, and before his 20th year wrote a play called 'Damon and Pythias,' which was afterward performed at Covent Garden. His fame rests on his novels, in which his brother Michael (q.v.) collaborated, and particularly on the 'O'Hara Tales,' in which Irish life in all its features is admirably portrayed.

**BANIM, Michael,** Irish novelist: b. Kilkenny, 5 Aug. 1796; d. Booterstown, 30 Aug. 1874. He claimed to have written 13 out of the 24 books of fiction confusedly associated with the names of John and Michael Banim, and called himself the author of 'Crohoore of the Bill Hook,' one of the most popular of the 'O'Hara Tales'; 'The Ghost Hunter' (1833); 'Father Connell' (1842), and 'The Town of the Cascades' (2 vols., 1864).

**BANISHMENT** (the act of putting under ban, proclamation, as an outlaw), a technical term in Scotch criminal law for the punishment of sending out of the country under penalties against return. This punishment was formerly much used in various forms — for example, banishment to the plantations or colonies; to England (even after the Union); from a particular county in Scotland, etc. Sometimes capital punishment was commuted to banishment for service in a foreign war. The old Scotch doom of deportation was gradually merged in transportation under various British statutes.

«Banishment is sometimes used in the sense of expulsion or deportation by the political authority on the ground of expediency, as well as in the sense of transportation or exile by way of punishment for crime.» 3 Am. & Eng. Enc. Law (2d ed.) 770. The United States Supreme Court decided in the case of Fong Yue Ting *v.* United States, 149 U. S. 698, that the right to exclude or to compel aliens, or any class of aliens, absolutely or upon certain conditions, in war or in peace, is an inherent and inalienable right of every sovereign and independent nation. The idea of banishment occurs in the ostracism and petalism of Greece, and the relegation, exile and deportation of Rome. It was generally accompanied by forfeiture of civil rights. In England, voluntary banishment was called abjuration. Banishment still obtains in Turkey, while the Russian system of banishment to Siberia is well known.

**BANISTER, John,** Anglo-American scientist: b. England; d. 1692. He settled in the West Indies, and later in Virginia, in the vicinity of Jamesburg, where he devoted himself to the study of botany. He was a contributor of a catalogue of Virginia plants to Ray's 'History of Plants,' in 1660. The genus *Banisteria* was named in his honor. His publications include 'Observations on the Natural Productions of Jamaica'; 'The Insects of Virginia'; 'Curiosities in Virginia,' etc.

**BANISTER, John,** son of the preceding: b. Virginia; d. 1787. He was educated in England and studied law there; became colonel in the Virginia militia; was a member of the Virginia assembly, and prominent in the patriotic conventions of the Revolutionary period; was a representative from Virginia in the Continental Congress in 1778–79, and one of the signers of the Articles of Confederation.

**BANJARMASSIN,** bä-yä-mäs'sẹn, Borneo, a town near the southeastern angle of the island, under the government of the Dutch, on an arm of the Banjar, about 14 miles above its mouth. Owing to the marshy ground and frequent inundations of the river the houses are built on piles, and many of them on rafts, the front next the river being used as a shop or stall on which wares are exposed for sale. On market days the water is covered with skiffs, having a single individual in each, moving about selling vegetables, etc. The people are continually on the river, all necessaries being purchased at these floating markets, and all business being done on the water. In every respect it is a floating town, possessing neither carriages nor horses; the only animals kept being pigs, goats, ducks, geese and fowls. The houses of the European functionaries, the government buildings, and the fort, are built partly of stone and partly of wood. The Fort Tatas is surrounded with palisades, and contains the resident's house, the magazines and barracks. Exports are pepper, benzoin, bezoar, rattans, dragon's blood, birds' nests, iron and straw mats very artistically made; and imports rice, salt, sugar, opium, coral, Chinese porcelain, silk, cutlery, gunpowder, etc. Pop. about 53,000.

**BANJO** (a negro corruption of *bandore,* Italian, *pandora,* from Greek *pandoura,* a three-stringed instrument), the favorite musical instrument of the negroes of the Southern States, and now widely popular elsewhere. It is five-stringed, has a body like a tambourine, covered with vellum or parchment strained to drumhead tension by adjustable clamps set close around the hoop, and a fretted neck like a guitar. The back is open. The strings pass from a tail piece over a low bridge similar to a violin bridge and thence to the tuning pegs. The banjo is played by stopping the strings with the fingers of the left hand and plucking or striking them with the fingers of the right. The upper or octave string, however, is never stopped. This string is 16 inches long, the tuning peg being part way up the neck. The other four strings are 24 inches long. When in position for playing the octave string is held uppermost. It is tuned to E'. Next to it is the lowest toned string, tuned to A, and the other three strings rising in tone, E°, G°, and B°. The music for the banjo is written on the treble clef — an octave above the tones as played. In some countries a 6-string banjo is in use, and there is also a 9-string instrument of the same class.

**BANK, Banks, Bankers.** The term bank and its derivatives does not occur in classical Latin. It first appears in low Latin about the beginning of the 13th century, when it seems to have been brought into Italy by the Norsemen and where it displaced the Roman *mensa,* as applied to the bench, table, counter,

or counting-table, or board upon which the dealer in money sorted and counted his coins. The Greek words for a banker or dealer in moneys were *trapezeta* and *collybista,* both of which were adopted by Roman writers. The Romans, in successive ages, had various terms for what would now be called a banker or bankers; and it is under these heads that information must now be sought concerning their rise and development. These Roman terms were *mensarius,* a sorter and counter of coins; *nummularius,* a money changer; *fœnator,* a lender of money on interest; *negotiator,* a lender of money in the provinces, where the usury laws did not prevail. *Camsor nummularius* also appears in some works.

The counting-table is still employed, chiefly in national mints. It consists of a wooden board with a hundred or a thousand circular holes, cavities or depressions, suitable to the size of the coins to be counted. A large heap of such coins is thrown upon the board, one end of the board is then raised so as to form an incline, when the holes are at once filled; the surplus coins roll off; and thus the counting of a thousand coins is done in a moment.

It is perhaps owing to the absence of the term "bank" or banker in classical works that banks are commonly supposed to be of mediæval or modern origin. This is so far from the truth that the necessity for their adoption has resulted in their establishment in all ages and countries where the government was sufficiently powerful to protect their funds from pillage and sufficiently just to permit and protect the exercise of their necessary and lawful functions. The earliest governments of this character were pontifical, the sovereign being both king and high priest; for example, the Brahminical sovereigns of India. In the "Gentoo," or Brahminical code, a translation of which, Governor Warren Hastings presented to the East India Company, there occur allusions to Bundhoos, or bankers, and to lenders of money other than pawnbrokers, coupled with the names of several sorts of money — gold, silver, copper and cowrie shells. The governor alludes to this code as of "the remotest antiquity," which is evidently true as to some parts of it, while other parts are as evidently mediæval. One of its provisions, a peculiar one, occurs also in the Athenian and Byzantine codes, though which of them was borrowed from the other is difficult to decide. Says the Gentoo Code, iii, 3, "If a man hath borrowed money from another upon agreement for a low rate of interest and afterward, though at his own option consents to an increased rate of interest, the former agreement shall be observed," or held good, by the magistrate. The corresponding Greek rule will be found in our article on BYZANTIUM, BANK OF.

Until the capture of Constantinople by the Latin forces in 1204, the prerogative of coining gold, a heritage from the ordinances of Augustus, was enjoyed exclusively by the Basileus and respected by the various princes of Christendom. As a matter of fact there were no gold coins struck in Christian Europe between Charlemagne and the fall of the "Greek" empire; the only coins of that metal (barring a few modern counterfeits) being the bezants (and their parts) of Constantinople and the dinars, etc., of Saracenic mintage. As the principal transactions of commerce were valued in gold coins, there existed no encouragement to establish a bank until the gold prerogative of the Basileus was destroyed and local coinage of gold was permissible. Hence such coinages, together with the establishment of banks of exchange and deposit, and transfer, as well as the open use of bills of exchange, warrants, checks, transferable bank receipts, etc., may all with confidence be dated from 1204, or such other local date as coincided with it, bearing in mind that the Æra Hispanica used in some of the Christian kingdoms of Spain, began 38 B.C., and the Æra Augusta, used in other states, both in Spain and elsewhere, began 15 B.C. The earliest gold coins of Christian Europe after the fall of Constantinople were struck in 10 different principalities between that date and 1257, when Venice struck its first sequin. Among the earliest banks were those of Venice, 1252 (from 1157 to 1252 it was a chamber of loans, not yet a bank); Delft, 1313; Calais, 1329; Geneva, 1346; Florence, 1350; and Barcelona, 1401. For the industrial history of the world's great banks see articles in this Encyclopedia as follows: *Ancient banks:* AMSTERDAM, BANK OF; BARCELONA, BANK OF; BYZANTIUM, BANK OF; FUGGERS, BANK OF THE; GENOA, BANK OF; HAMBURG, BANK OF; MEDICI, BANK OF THE; NUREMBERG, BANK OF; STOCKHOLM, BANK OF; TYRE, BANK OF; VENICE, BANK OF. *Modern banks:* DEUTSCHE BANK; DISKONTO-GESELLSCHAFT; DRESDENER BANK; ENGLAND, BANK OF; FRANCE, BANK OF; ITALY, BANK OF; NATIONAL CITY BANK OF NEW YORK. See also BANKS AND BANKING.

**BANK OF AMSTERDAM.** See AMSTERDAM, BANK OF; BANKS AND BANKING — ORIGIN AND DEVELOPMENT OF BANKING (article 1).

**BANK OF BARCELONA.** See BARCELONA, BANK OF; BANKS AND BANKING — ORIGIN AND DEVELOPMENT OF BANKING (article 1).

**BANK CHECKS.** See BANKS AND BANKING — COMMERCIAL PAPER (article 17).

**BANK CURRENCY.** See CURRENCY.

**BANK DEPOSITS.** See BANKS AND BANKING — GUARANTY OF BANK DEPOSITS (article 20).

**BANK OF ENGLAND.** See ENGLAND, BANK OF.

**BANK OF FRANCE.** See FRANCE, BANK OF.

**BANK HOLIDAYS,** days during which banks are legally closed. In the United States they are: 1 January, or New Year's Day, a legal or bank holiday in all the States except Arkansas, Delaware, Georgia, Kentucky, Maine, Massachusetts, New Hampshire, Rhode Island, and North and South Carolina. Fourth of July, Independence Day and 25 December, Christmas Day, are bank holidays in all the States and Territories of the Union. Thanksgiving Day and public fast days appointed by the President of the United States are also legal, or bank, holidays. Twelfth of February, the anniversary of the birth of Abraham Lincoln, is a legal holiday in nine States. February 22, the anniversary of the birth of Washington, is a legal holiday in all the States save Arkansas, Iowa and Mississippi. The first Monday in September, Labor Day, is a holiday in nearly all the States. January 9,

anniversary of the battle of New Orleans, and Fireman's Day, 4 March, are legal holidays in Louisiana. Good Friday is a legal holiday in Florida, Louisiana, Minnesota and Pennsylvania; and Shrove Tuesday in Louisiana and Alabama. Decoration Day (North) and Memorial Day (South) are observed in the several States.

In England and Ireland the bank holidays are: Good Friday, Easter Monday, the Monday in Whitsun week, called Whit Monday, the first Monday in August, and 26 December, called Boxing Day. In Scotland: (1) New Year's Day; (2) the first Monday in May; (3) the first Monday in August; (4) Christmas Day.

When one of these holidays falls on Sunday it is observed on the following day, and a note or check becoming due on a holiday or a Sunday is payable on the first business day following.

**BANK OF NORTH AMERICA.** See BANKING IN THE UNITED STATES.

**BANK NOTE ISSUES.** See BANKS AND BANKING — BANK NOTE ISSUES (article 19).

**BANK-SWALLOW,** a small swallow, familiar not only in all parts of America, but in most other countries, for its habit of breeding in colonies in holes in sand-banks. It is sooty black above, and white on the under surface of the body, with a dusky band across the breast. This swallow comes from its winter home in the tropics, among the earliest birds of spring, and spreads northward even to the borders of the Arctic Ocean. Many, however, remain within the United States, where companies of them seek the banks of streams or exposed cliffs of sand, and bore in close proximity a great number of tunnels, which may be seven or eight feet deep. The bill and feet are both exceedingly weak, yet with these feeble tools each pair, working alternately and with great diligence, complete their excavation in a surprisingly short time. The same bank will be occupied year after year. The inner extremity of the tunnel is furnished with a nest of dry grass and feathers, and there are laid in June four or five pure white eggs. The tunnels are used as roosting places at night by both sexes, and when the young are hatched they will scramble to the mouth of the burrow and may be seen sitting there some days before they obtain strength and courage to launch forth upon their wings. These swallows feed entirely upon small insects caught in the air, and the sight of a crowd of them darting about the neighborhood of their homes, with a constant twittering, is a familiar sight of our country districts. The English sparrows trouble them greatly by seizing upon their burrows and dragging out the furniture; and snakes and mice sometimes enter the holes, but against most enemies these swallows are well protected. Our common species (*Clivicola riparia*) is also numerous throughout Europe and Asia. Very similar species inhabit the Oriental region and Africa. These birds are well described in all standard works of ornithology, and some special information may be obtained in the 'Monograph of the Hirundinidæ' by Sharpe and Wyatt (1885–94); and in 'Bird Watching,' by Edmund Selous (1901). See SWALLOW.

**BANKRUPT,** a term derived generally from Italian, *banca,* a bench, and Latin, *ruptus,* broken, in allusion to the benches formerly used by the money-lenders in Italy, which were broken in case of their failure. The word in its most general sense signifies an insolvent person, but more strictly an insolvent merchant.

There is perhaps no branch of legislation more difficult, and at the same time more important, than that which defines the relations of debtors and creditors. One of the first objects of all laws, after the protection of the person, is the enforcement of the obligation of contracts, and among all the contracts made in a community those imposing the obligation to pay money constitute the most numerous class. Some of the first questions in legislation are: By what means shall this obligation be enforced and by what penalties shall the breach of it be punished? In many communities, especially in the earlier stages of civilization, the breach of such a contract or obligation is regarded as a crime, and the insolvent debtor is treated as a criminal. The ancient laws upon this subject in England so regard the insolvent trader. The early laws of the Romans and Athenians authorized the most rigorous measures for procuring satisfaction of a debt, even permitting the sale of the debtor into slavery for this purpose. The Battas of Sumatra still, it is reported, sell not only the debtor but also his family for the benefit of the creditor. But as civilization advances the laws put a more mild construction upon the debtor's failure to fulfil his contract, and, with certain qualifications, and under certain restrictions, attribute it to misfortune, and, on giving up his property to be divided among his creditors, discharge him from all further liability.

The power of making bankrupt laws in the United States was, by the Constitution, conferred on Congress, which alone had the power to make a bankrupt law applicable to, and binding upon, all creditors in the United States, and for all descriptions of debts. This power was first exercised by Congress in 1800, by the enactment of a bankrupt law limited to five years, and which expired by its own limitation. This act was modeled upon the English statutes of bankruptcy existing at the time, and, like them, was applicable to no debtors except merchants. Both by the English statutes and the French Code, persons capable of becoming bankrupts are such as fall under the general description of merchants, which the French describe as commerçants.

A statute in the reign of George III, relating to bankrupts in Scotland, describes a person capable of becoming such to be one who "either for himself, or as an agent for others, seeks his living by buying and selling, or by the workmanship of goods or commodities"; an English statute of the reign of George IV, embodying the previous acts and judicial decisions on this subject, enumerates particularly the descriptions of persons who are to be considered merchants and capable of becoming bankrupts. See BANKRUPTCY LAWS.

**BANKRUPTCY, A,** by BJÖRNSTJERNE BJÖRNSON. The appearance of Björnson's 'Bankruptcy' in 1875 marks a new departure in Norwegian literature. For the first time

money becomes the subject of a poetical production, a theme which had previously seemed altogether too prosaic for real poetry, but which Björnson handles with daring skill. He deals with the financial situation of a modern business man and does not disdain figuring out his assets and his liabilities. The play is, furthermore, significant because of the fact that it introduces for the first time the modern cultured Norwegian home. There had been some portrayals of home life previous to this but only glimpses or at most a picture of home chilled by the iron determination of a *Brand*. In 'Bankruptcy' home takes its place upon the stage in all its fullness of meaning, with its joys and with its sorrows. The theme of the play is a business man's obligation to his fellowmen whose moneys are entrusted to his care. In how far may he risk the funds at his disposal? Has he the right to do business in such a way that his ventures if unsuccessful will mean losses to his fellows? The spirit of the play is to the contrary, and Björnson shows admirably how miserable is the life of a man who tries to avoid fundamental moral law. He shows the baneful influence exerted on the man's family and home. The success of 'Bankruptcy' was spontaneous. The pictures are simply and naturally drawn, and they made an irresistible appeal to the *common* man. This was no doubt partly due to the sound humor pervading the work. Consult Henrik Jaeger, 'Illustreret norsk literaturhistorie' (Vol. II, pp. 589–639 and 711–768); Georg Brandes, 'Det Moderne Gjennembruds Maend' (pp. 1–69, tr. by Mary Morison in a volume entitled 'Henrik Ibsen, Björnstjerne Björnson: Critical Studies.' By George Brandes, 1899).

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**BANKRUPTCY LAWS.** When a person is unable to pay his debts in full, the law of civilized countries adopts some means of satisfying the creditors, as far as they can be satisfied, out of the debtor's estate, and relieving the debtor himself from pressure which, by his own efforts, he would not be likely to overcome. The debtor having been declared a bankrupt, his property vests in his creditors for the purpose of being divided ratably among them, and consequently he starts anew, entirely relieved from the obligations thus partially satisfied. In general terms this is the process of bankruptcy as observed in modern societies. The law of bankruptcy is, in fact, a modern creation slowly evolved out of the Criminal Code in answer to the necessities of a widely spread industrial life.

The early law of Rome, while prohibiting contracts of usury, gave the legal creditors the savage remedy of dividing the carcass of their debtor or selling him and his family into slavery. The *Lex Poetelia* (about 326 B.C.) enabled a debtor who could swear to being worth as much as he owed to save his freedom by resigning his property; and many years afterward the legislation of Julius Cæsar established the *cessio bonorum* as an available remedy for all honest insolvents. The bankrupt law was slowly developed in England. The first English statute on bankruptcy (34 and 35 Henry VIII, c. 4) was directed against fraudulent debtors, and gave power to the lord chancellor and other high officers to seize their estates and divide them among their creditors. In England, before 1841, only a tradesman could be a bankrupt. The distinction was then abolished. It was abolished in the United States in 1869. In the United States, Congress alone has power to pass a bankrupt law which shall have authority throughout the country. The several States may enact such statutes when there is no law of Congress in operation. The first general bankrupt act in the United States was passed in 1800 and was repealed in 1803. In 1841 another law was put in operation, with a special view of meeting the urgent needs of debtors who had been ruined by the commercial revulsion of 1837–38, and who could receive no effectual relief from local laws. This act was repealed in 13 months, but in the meantime a large number of cases had been disposed of, amounting to 3,250 in Massachusetts alone. Another bankrupt law was passed which took effect 1 June 1867. It was framed with great care by a committee of the House of Representatives, of which Mr. Jenckes was the chairman and chief working member. Its authors hoped that it would form a permanent addition to the jurisprudence of the country, but it was repealed within a few years.

An act "to establish a uniform system of bankruptcy throughout the United States," was passed by both Houses of the 55th Congress, and by the approval of President McKinley became a law on 1 July 1898. The question had been brought before Congress for several years, the issue not being between the political parties, but on the method of legislation, one side favoring the creditor and the other the debtor class. The Nelson bankruptcy bill, which at the first, or special, session of the 55th Congress passed the Senate, failed to receive the consent of the House. The new law was a compromise between the Nelson bill, calculated chiefly to benefit debtors, and the Torrey bill, designed to guard the interests of both creditors and debtors. The adoption of the bill which became a law was mainly through the long-continued efforts of Senator Hoar (Rep. Mass.), aided especially by Senator Nelson (Rep., Minn.), and Representative George W. Ray (Rep., N. Y.). A conference between the two Houses was held, which reached an agreement on 15 June, the report being adopted by the House, 28 June, by a vote of 133 to 53; present and not voting, 24. All the votes against the bill came from the South and the far West. Slight changes to correct defects in this act have since been made through three supplementary acts approved 5 Feb. 1903, 15 June 1906 and 25 June 1910, and further supplemented by rulings of the Supreme Court, as to matters of practice, and by official forms of the same court.

The provisions under which a man can be thrown into bankruptcy against his will are as follows: (1) where a man has disposed of his property with intent to defraud; (2) where he has disposed of his property to one or more creditors to give a preference to them; (3) where he has given a preference through legal proceedings; (4) where a man has made a voluntary assignment for the benefit of his creditors generally; (5) where a man admits in writing that he is a bankrupt. The last two

provisions are practically voluntary proceedings. Under the common law a man is considered insolvent when he cannot pay his debts when they are due; under the new law he is deemed insolvent only when his property, fairly valued, is insufficient to pay his debts. Only two offenses are cited under the new law; one when property is hidden away after proceedings in bankruptcy have been begun, and the other when perjury is discovered. Discharges are to be denied in only two cases; one, in which either of the offenses detailed has been committed, and the other, when it is shown that fraudulent books have been kept. The term of imprisonment for either of these offenses is not to exceed two years.

The law provides a complete system throughout the United States, and for its administration by the United States courts in place of the different systems formerly in existence in the various States administered by State courts. In bankruptcy proceedings a bankrupt debtor may turn over all his property to the court, to be administered for the benefit of his creditors, and then get a complete discharge from his debts. A bankrupt may of his own motion offer to surrender his property to the administration of the United States court and ask for his discharge in voluntary bankruptcy, or creditors may apply to the court to compel a bankrupt to turn over his property to be administered under the act for the benefit of the creditors in involuntary bankruptcy. The bankrupt who has turned over all his property and conformed to the provisions of the acts is entitled to a judgment of court discharging him from any future liability to his creditors. The State laws relating to insolvency are not affected by this law, but remain in full force and effect.

Extended powers are given by the law for the taking possession and the administration of the assets, among others, to allow and disallow all claims against bankrupt estates; appoint receivers and take the necessary measures for the preservation and charge of the property of a bankrupt; to arraign, try and punish bankrupts, officers and other persons, and the agents, officers and members of the board of directors or trustees, or other similar bodies or corporations for violation of the act; to authorize the business of the bankrupt to be conducted for limited periods; to cause the assets to be collected and reduced to money and distributed, and substantially determine all controversies in relation thereto; to enforce obedience to lawful orders by fine or imprisonment; and to extradite bankrupts from one district to another. As all questions, both of law and fact, in relation to the property of the rights of the various parties, must be decided in the bankruptcy proceeding, it is provided that referees be appointed, who are charged with the duty of hearing the allegations and testimony of all parties, and deciding all such questions as may arise. Each case, as it comes up, is assigned to some referee, whose duty it is to adjudicate and pass upon all such questions arising therein in the first instance, the right being reserved to any parties to appeal from the decision of the referee to the United States District Court. The duties of the referee are substantially of a judicial character, and he occupies much the position of a judge of primary resort, subject to an appeal of the court, and is required to take the same oath of office as that prescribed for judges of the United States courts.

Provision is made in the act for allowing bankrupts to compromise or settle with their creditors by proceedings known as composition proceedings, whereby, if a bankrupt and a majority of his creditors agree upon some basis of settlement, the same, if approved by the court, shall become binding upon all creditors. The decision of the question as to the approval of compositions and granting discharges to a bankrupt from his debts is specifically reserved by the act to the judges of the United States courts; but the court, by virtue of its general powers, may refer such matters to the referee to take testimony and report to the court his opinion thereon. The aim of the act has been to make the expense of the proceedings depend largely upon the amount of the property involved, and the compensation of the referee is fixed substantially at 1 per cent on the amount distributed to the creditors in ordinary cases, where the assets are distributed by the court, and one-half of 1 per cent in composition cases, and the trustees who have charge of the actual management of the bankrupts' property receive as compensation such commissions on accounts paid out by them as dividends as the court may allow, not to exceed, however, 3 per cent on the first $5,000, 2 per cent on the second $5,000, and 1 per cent on all sums in excess of $10,000.

**Bibliography.**— Brandenburg, 'Law of Bankruptcy' (3d ed., Chicago 1903); Collier, 'Law and Practice in Bankruptcy' (9th ed., Albany 1912); Brandenberg, E. C., 'Law of Bankruptcy' (3d ed., 1913).

**BANKS,** a nautical term applied to shelving elevations in the sea or the bed of a river, rising to or near the surface, composed of sand, mud or gravel. When tolerably smooth at the top they constitute shallows, shoals and flats; but when rocky become reefs, ridges, keys, etc. A good chart always defines them, indicating whether they are sands or rocky.

**BANKS, Sir Joseph,** English naturalist: b. London, 4 Jan. 1743; d. Islesworth, 19 June 1820. At Oxford he began to study botany and other branches of natural history, to which his attention had already been turned from about the age of 14. He formed a volunteer class in the university and brought Mr. Lyons from Cambridge to teach it. In May 1766 he was chosen a member of the Royal Society, and in the following summer he went to Newfoundland and proceeded to Hudson Bay to collect plants. In 1768 he, with Dr. Solander, a pupil of Linnæus and assistant librarian at the British Museum, accompanied Cook on his voyage of discovery, Banks being appointed naturalist to the expedition. In an expedition into the interior of the desolate Tierra del Fuego, for the purpose of examining the country, the two naturalists narrowly escaped perishing with cold. Banks procured the introduction of the bread-fruit tree into the West Indies, and he wrote the botanical observations in the account of Cook's voyages. In 1772 he visited Iceland with Dr. Solander, in order to make himself acquainted with its natural productions. During this voyage the Hebrides were examined, and the columnar

stratification of the rocks surrounding the caves of Staffa was made known to naturalists for the first time. Banks became president of the Royal Society in 1777. In 1781 he was made a baronet. The French chose him a member of the National Institute in 1802, because to his intercession they owed the recovery of the papers of La Péyrouse relating to his voyage, which had fallen into the hands of the British. His library and his collections in natural history are celebrated. Besides other contributions he wrote 'A Short Account of the Causes of the Blight, the Mildew, and the Rust in Corn' (1805). In accordance with a contingent bequest his collections were added to the British Museum. The genus *Banksia*, of the natural order *Proteaceæ*, was named in honor of him by the younger Linnæus.

**BANKS, Louis Albert,** American clergyman and author: b. Corvallis, Ore., 12 Nov. 1855. He was educated at Philomath College and at Boston University. He entered the Methodist Episcopal ministry in 1879; was pastor of the Independence Avenue Church, Kansas City, in 1909–11 and since then has been engaged as evangelist in union evangelistic campaigns. He was the Prohibition candidate for governor of Massachusetts in 1893. Among his numerous writings are 'The People's Christ' (1891); 'The White Slaves' (1892); 'Anecdotes and Morals' (1894); 'Honeycomb of Life' (1895); 'Christ and His Friends' (1896); 'Live Boys in Oregon' (1897); 'My Young Man' (1899); 'Chats With Young Christians' (1900); 'The Great Saints of the Bible' (1901); 'Youth of Famous Americans' (1902); 'Soul-Winning Stories' (1903); 'The Religious Life of Famous Americans' (1904); 'Spurgeon's Illustrative Anecdotes' (1906); 'Sermons Which Have Won Souls' (1908); 'The Problems of Youth' (1909); 'The World's Childhood' (1910); 'The Great Themes of the Bible' (1911); 'A Summer in Peter's Garden' (1913); etc., etc.

**BANKS, Nathaniel Prentiss,** American soldier and statesman: b. Waltham, Mass., 30 Jan. 1816; d. there 1 Sept. 1894. Entirely self-taught, he worked himself up from the position of bobbin-boy in a cotton factory to the editorship of a weekly newspaper. He read law, was admitted to the bar, and began to practise, but soon became active in politics. Elected to the Massachusetts legislature in 1849, he became speaker in 1851–52. In 1853 he was president of the Massachusetts Constitutional Convention, and the same year was elected to Congress as a Coalition Democrat. The session which began 3 Dec. 1855, was memorable for its bitter speakership contest, the candidates being Banks and William Aiken, a large slaveholder of South Carolina. The contest lasted two months, the President's message being withheld, and all legislative business blocked. The sergeant-at-arms borrowed $20,000 from a Philadelphia bank in order to make advances to needy members of both parties. On the 133d ballot 2 Feb. 1856, Mr. Banks was elected. None of his decisions while speaker were ever reversed by the House. He was governor of Massachusetts, 1857–59. In 1861 President Lincoln appointed him major-general of volunteers. He conducted active operations in the Shenandoah Valley and fought with credit at Winchester and Cedar Mountain. In co-operation with Admirals Farragut and Porter he invested Port Hudson and unsuccessfully attempted to carry it by assault. In 1864, much against his judgment, he was placed in command of the Red River Expedition, which resulted most disastrously for the Federal forces. Banks was widely censured and soon relieved of his command. General Grant, years later, in his 'Memoirs' furnished a full vindication of Banks by giving the name of the superior officer responsible for the expedition. From 1866 to 1876 General Banks represented his old district in Congress, and was prominent as chairman of the Committee on Foreign Relations. He was United States marshal for Massachusetts, 1879–88. In 1891 Congress bestowed on him an annual pension of $1,200, a severe mental disorder having come upon him.

**BANKS, Thomas,** English sculptor: b. Lambeth, 29 Dec. 1735; d. 2 Feb. 1805. He studied sculpture in the Royal Academy, and was sent as one of its students, to Italy. Here he executed several excellent pieces, particularly a bas-relief representing Caractacus and his family before Claudius, and a Cupid catching a butterfly. Among other works executed by him was a colossal statue showing Achilles enraged for the loss of Briseis, now in the entrance hall of the Royal Academy. He was also the sculptor of the admired monument of Sir Eyre Coote in Westminster Abbey, and of those of Dr. Watts and Woollett. He was elected a member of the Royal Academy in 1785.

**BANKS, Sir William Mitchell,** Scottish surgeon and anatomist: b. Edinburgh 1842; d. 1904. He was graduated at Edinburgh University in 1864, was appointed demonstrator of anatomy in the University of Glasgow, and later was consulting and operating surgeon at Liverpool. He originated the modern method of operating for cancer of the breast. He reorganized the Liverpool Medical School and founded University College, where he was for a time professor of anatomy. He was chosen first president of the Liverpool Biological Society in 1886. In 1897 he delivered the address in surgery before the British Medical Association at Montreal. He published numerous papers and addresses.

**BANKS LAND,** an island in the Arctic Ocean, discovered by Parry in 1819, explored by McClure in 1850, and named by him Baring Island. It is separated by Banks Strait from Melville Island, lying to the northwest, and by Prince of Wales Strait from Prince Albert Land, lying eastward.

**BANKS AND BANKING.** This department has been developed to give a concise digest of banking, finance, money, history of banking, etc. It is subdivided as follows:

1. Origin and Development of Banking.
2. The Functions of Banks.
3. World Systems—Types.
4. International Banking.
5. Foreign Exchange.
6. Investment Banking.
7. The Clearing House.
8. Banking in the United States.
9. The National Banking System.
10. State Banking System.
11. Private Banks.
12. Federal Reserve System.
13. Savings Banks.
14. Postal Savings Banks.
15. Bank Organization and Management.
16. Bank Supervision.
17. Commercial Paper.
18. Bank and Trust Company Advertising.
19. Bank Note Issues.
20. Guaranty of Bank Deposits.
21. Trust Companies.
22. Bankers' Associations in the United States.

**1. ORIGIN AND DEVELOPMENT OF BANKING.** *Bank* (from the mediæval *bancus* and *banco*, the ancient name having been *fiscum*, a purse for money. (Cicero, Verr. 2). Bancus or banco is commonly traced to the *bench* whereon money-changers sat, when banking merely consisted in the purchase and sale of uncurrent coins, but as shown in Madox's 'History of the Exchequer,' this is erroneous. Bancus or banco relates only to the *Justices' Bench* to which, in the 12th century in England, common causes, "Common Pleas," began to be removed from the King's Bench to local courts. The point is important, because it disposes of the fable that banks owe their origin to the money changers of the Dark Ages. Primarily a bank or fisc means a place of deposit for money, open to the public. Banks can be traced back to Rome, Greece, Egypt, Babylon, indeed to every country which issued money susceptible of being counted, and whose government was sufficiently powerful to protect their funds from pillage and sufficiently just to permit the exercise by the bankers of their useful and lawful functions. The word *bundhoo*, a bank, is even used in the Code of Menu (p. 10), but the date is uncertain.

The earliest settled and permanent governments were pontifical, the sovereign being both king and high priest. Hence the earliest banks in the Occident were the national temples, such as Delphi and Delos in Greece, whose activities in this respect date back to the earliest use of coined money. This money they received on deposit and loaned out at rates of interest varying from 10 to 30 per cent per annum.

Following the temple banks, perhaps coeval with them, were those private bankers whom we first hear of in Babylon, tempo Nebuchadnezzar, under the title of "Egibi and Sons," about 600 B.C. (Cuneiform inscription). The state bank at Ilion, mentioned by Boeckh, as paying 10 per cent to depositors for money for the public service, must be dated about the 3d or 2d century B.C. About the same period Theocritus, whose "Idylls" date 260 B.C., mentions a banker at Alexandria, by name Caicus, who paid interest on deposits withdrawable at pleasure of the depositor, and payable not only in business hours, but at any time of day or night. (Epit, XXI, iii). Livy (VII. 21), mentions bankers (*argentarii*) in Rome, 354 B.C. Tacitus and Suetonius both allude to banks in Rome during the reigns of Augustus and Tiberius. Adam (Rom. Ant.) cites numerous instances of private banks and banking terms and incidents during the early empire, such as the deposit and withdrawal of money, payment of interest, checks or orders for payment, acceptances, bankers' books of account kept by double entry, transfers of accounts, loans, etc. Of late years an iron safe deposit has been dug up of the time of Hadrian, attached to which is a body of regulations, very similar to those now in vogue. It would appear that the emperors had become the sole bankers of the empire. Following the method which he adopted with respect to the pontifical, censorial, tribunitial, consular and other powers of the state, Augustus absorbed the most important financial powers into his own person, becoming himself essentially a corporation sole; for of this character was the office inherited and administered by his official successors. The public treasury was called *Ærarium*, the imperial treasury (practically, the national bank), the *Fiscum*. It received and paid out deposits of money, it loaned money at interest, it accepted heritages (some persons bequeathed their entire fortunes to it), and it devoted large funds to public purposes.

The functions performed at Rome by the Imperial fisc were permitted to be exercised in the provinces by the Proconsular fiscs, until the weakening of the Central power and encroachments of the Proconsular agents broke down the entire structure of Roman authority. Lampridinus makes some allusion to bankers in the reign of Alexander Severus; afterward, all mention of banks or bankers ceases for a long period.

In the reign of Alexander Severus the fiscal laws and system of the empire underwent a radical change, yet the evidences of it, as revealed by inscriptions recovered in recent times, are scattered over several centuries; chiefly the 3d, 4th and 5th. The public treasury and Imperial fisc came to be identical; a change traced to Aurelian. The Lord Treasurer, *Sacrarum Largitionum*, managed all public funds; while the imperial demesnes and privy purse were committed to the *Comes rerum privatarum*, both of them being endowed with sacerdotal titles. (Bury, I, 44). The interdiction against the taking of interest for money which these changes involved began a new period in the history of banks. The capital of the empire had been transferred to Byzantium (Constantinople), so that Europe, formerly within easy reach, was now far removed from the court. What the government denied, private interest afforded; the Jews braved its displeasure and its penalties by providing a means to relieve the necessities of the poor: a species of poverty banks, or lending houses, first mentioned by Prudentius, as having been established in Italy about A.D. 400. For a period of two or three centuries during the Dark Ages these establishments appear to have been the only means of procuring loans of money.

About the 8th century the poverty banks were taken over by fraternities of monks and confirmed by the Popes as *montes pietatis;* the right to exact collateral security and to charge interest being affirmed by several pontiffs, especially Pius II and Sixtus IV. After the fall of Constantinople in 1204 the monks were superseded in this lucrative business by the Lombard goldsmiths and money changers, whose various names of Bardis, Corsini, etc., neither shielded them from popular aversion, nor prevented them from driving a lucrative trade. So influential did they become, that in 1311 one of their number, Raoul the goldsmith, was ennobled by his patron, Louis X; the first instance of the sort known to history. In 1313 there was a "Lombard" bank at Delft, and in 1320 another one at (probably) Calais, which latter loaned 5,000 marks (about 16,000 gold dollars) to Edward III of England. The banks of Geneva, 1345, and of Florence, circ. 1350, were probably an evolution from the Lombard goldsmiths, just as the latter were evolved from the *montes pietatis* and these again from the poverty banks of the Jews.

For the first time in 400 years, a circum-

stance entirely overlooked in works of reference, Christian gold coins now began to be struck in Europe outside of Constantinople, where the privilege had ever been jealously guarded by the Basileus. This had much to do with the progress of banks, for it provided a more portable and reliable money than the heterogeneous and often debased and degraded silver coins of the various principalities and kingdoms which had been erected upon the ruins of the empire. The first Christian gold coins of western Europe were the augustals of Frederick II, 1225, followed by the ducats of Portugal, same year, the pavillons and agnels of Louis IX of France, the ducats of Florence and Genoa, 1253, and the sequins or ducats of Venice, 1276. Consult Del Mar, 'Science of Money,' p. 74.

Confining the term bank to its more modern sense, what may be regarded as one of the earliest, perhaps the earliest, Christian institution of this character, was the Bank of Barcelona, 1401. As the operations of this bank had a bearing upon the affairs of America, they claim especial interest. "In Spain, by the ordinance of Valencia, made by King John, who conquered the kingdom of Aragon, it is expressly provided that *reals* shall only be coined in Valencia and that the minters shall be supervised by two well-known citizens; so that no fraud shall be committed as to material or weight" (Grimaudet, 'Law of Payment,' New York edition, p. 14). The coin referred to is the familiar Spanish *real de plata,* of eight to the dollar. This coin was lawful money in the United States down to 1853 and till recently was known to New York tradesmen as a "shilling" and throughout the Southern States and California, as the "bit." The coinage supervision ordered by King John (father of Ferdinand, in whose reign Columbus discovered America), was afterward extended to Barcelona, where it furnished the basis for the extensive dealings of its bank in the exchange of full-weighted reals and reals de á ocho (dollar pieces of eight reals) for the heterogeneous coins which flowed from all parts of Europe into that great commercial emporium; among them the coinages of Moslem Spain (Granada).

From Barcelona King John's test of the coins, called in England "The Trial of the Pyx," was carried from Spain into the Spanish-American mints of Mexico and Peru and adopted by the United States government from the period of its inception. This supervision and testing of the coins is still conducted in the American mints under a commission of civilians appointed by the Secretary of the Treasury. It constitutes the groundwork and basis of honest money and banking.

The Bank of Barcelona also received on deposit and disbursed the revenues, or part of them, of the four great ecclesiastico-military orders and kept the accounts of about a dozen other orders of knighthood, like those of Calatrava, Saint James, Golden Fleece, Saint George, etc., some of which were ecclesiastical and some merely chivalrous. The royal treasure, formerly deposited in the castle of Segovia, is believed to have been removed to the Bank of Barcelona, because the Contador-General is known to have drawn some of his warrants for public expenses upon that institution. In 1480 Isabella, holding court at Toledo, signed a decree which greatly affected the bank. To support the government of Castile Henry IV had issued certain cedulas or certificates of annuities assigned on the public rents, and these by purchase had become the property of the nobles, who in turn had borrowed money on them from the bank. Isabella's decree, denouncing and annulling these certificates — virtually an act of repudiation — was entrusted for execution to her confessor, Ferdinand de Talavera, who performed his task with such fidelity that it "saved" 30,000,000 maravedis annually to the Crown (Prescott). If the bank survived the depletion of its resources in 1480, it could scarcely have weathered the civil war of 1517–22, during which period of turbulence the bank, despairing of a return to peace and security, appears to have quietly discharged its obligations, wound up its affairs and honorably dissolved.

Between the Bank of Barcelona (barring the "Bank" of Saint George at Genoa, 1407), that is to say between 1401 and the formation of the Bank of Amsterdam, 1607, works of reference will be searched in vain for any notice of a public bank in Europe. The significant absence of a bank in any kingdom or principality of the civilized world for an interval of over 200 years, is not even commented upon. The so-called Bank of Venice, which is assigned to the year 1157, was not a public bank until 1619, when it was reorganized as the Banco di Rialto, which converted it into a public bank of deposit-and-withdrawal. Meanwhile the Bank of Venice was merely a Chamber of Loans (Camera degli Imprestigi) into which patriotic capital was invited to assist the government of Venice. Even had it been a public bank it was not in a position to exercise the proper functions of a European bank, namely, the agglomeration of private capital, to be distributed in loans helpful to European commerce and enterprise. How could a Venetian bank promote or assist the trade of Spain, France, England, the Netherlands or Germany? It could not, and in fact it did not do anything of the sort. Between the dissolution of the Bank of Barcelona, rather between the date when its commercial activities ceased, about 1522, and the Bank of Amsterdam, 1607, and Hamburg, 1619, an entire century elapsed. What institution of security and commercial credit or convenience filled the void?

This interval witnessed the greatest of all commercial events, the discovery, conquest and colonization of America, the abstraction and removal of its enormous treasures in gold and silver, their coinage into money, the opening to plunder and afterward to commerce of India, China and Japan, the consolidation of the German empire, the rise of prices and the progress of the Reformation. Where are the institutions into whose hands these conquered treasures might be placed, to whom could the impatient European commerce of this period apply for assistance? There seems but one reply.

Charles I, King of Spain and sovereign of America, elected Emperor of Germany as Charles V, in 1519, having been assisted to this elevation by the banking house of the Fuggers of Augsburg, turned over to them the entire

banking business of his extensive empire. He assigned (farmed) to them the monopoly of quicksilver (Almaden mines of Spain), the Guadalcanal silver mines and virtual control of many of the mines in America. He transferred to them the vast accounts and balances of the military and episcopal orders. He even granted to them the royal and imperial prerogative of coinage (1534). They conducted the mints of Valencia, Augsburg, Weissenhorn (Bavaria), and other places. They even were privileged to stamp their names and titles upon the golden florins, for example, *Ant. Fugger D. in Weissenhorn, 1530–60.* For upwards of a century, such of the American treasure as escaped capture by the English, Dutch and French cruisers passed through their hands, leaving them a fortune estimated at 60,000,000 florins or ducats, say $150,000,000. They became bishops, barons, dukes, even princes, and their house survives to the present day. Such was the bank of the 16th century.

Beyond the jurisdiction of England, France, the Netherlands and some of the Italian republics, the sole assistance which commerce enjoyed from the vast stores of the precious metals which flowed into Europe during this period came from or through the house of Fuggers. It was not until the reign of Charles II, 1665, some say Charles III, that Spain was enabled to establish a public bank for the convenience of the public: that of San Carlos. Meanwhile the Inquisition, by burning or banishing the Moors and Jews, had so thoroughly destroyed her domestic industry that it imparted to this little known institution but a feeble existence. To American readers it is only known through the pages of Blanqui.

Mention has already been made of the banks of Amsterdam and Hamburg. Between them came the Bank of Middleberg, 1616, and after them the banks of Rotterdam, 1635, and the Swedish Riksbank of 1656. All of these institutions were of Protestant origin, opposed to the Catholic house of Fugger, which after the Peace of Westphalia in 1648 lost much of its imperial support and influence.

These northern institutions became the effective promoters of that enormous expansion of commerce, industry and the arts, which bestowed upon the 17th century the name of the Halcyon Age. They promoted and supported the English and Dutch East and West India companies, the African Company and the numerous other cosmopolitan enterprises of a marvelous period; and they imparted to the commerce of the British, French, Dutch and Scandinavian ports an impetus which they have ever since retained. Until 1656, when the Riksbank of Sweden issued circulating notes, their functions consisted almost solely of receiving funds on deposit for safety, and loaning them out upon commercial or governmental bills of exchange, promissory notes or bonds. Some of them were endowed with special privileges or monopolies, as the banks of Amsterdam, England and France (Comptoir des Escomptes). All of them were of great service to commerce, indeed the Bank of Amsterdam went so far, in its secret loans to the Dutch East India Company, that it became insolvent about 1760 and was liquidated in 1819.

Meanwhile a new empire had arisen beyond the Atlantic, whose growing commerce demanded the convenience and assistance of public commercial banks. "In 1652 the province of Massachusetts found it necessary (for it was no mere act of wantonness or of profit-seeking by the colony), to defy the Royal authority by erecting a Mint and striking Pine-Tree shillings. The origin of this silver is not known. In 1662 some of the silver smuggled out of Mexico or captured from the Spanish galleons, found its way to the Chesapeake and was coined in Maryland." These events presaged a bank. In 1680 a bank was established for the convenience of planters in South Carolina, which William Paterson, afterward promoter of the Bank of England, now fresh from the Darien colony on the Isthmus of Panama, is said to have investigated. Five or six years later, 1686, John Blackwell and his coadjutors united to establish a bank of issue in Boston, also in defiance of British authority; and on 3 Feb. 1690, the colony of Massachusetts issued its own bills of credit. It has been suggested that these bills were to pay off the soldiers in the Phips campaign to Quebec, whereas in fact the notes were issued before the Phips expedition was resolved upon. One of these notes is still in existence. (A copy will be found in Del Mar's 'History of Money in America,' p. 79). On 2 July 1692, the colonial government of Massachusetts made these notes legal tenders for the payment of all debts and obligations, except those which had been contracted in special moneys. The amount of the notes outstanding was between £30,000 and £40,000.

The pressing necessity for circulating money and the creation of banks, two subjects unavoidably connected for sustaining and developing the exchanges and commerce of the British-American colonies, manifested itself almost at the outset of their settlement; and had no little to do with their subsequent revolt from royal authority. The position of the Crown, as laid down in the celebrated case of the Mixt Moneys, 1604, was that the creation and issuance of money was a royal prerogative, which could not lawfully be exercised by any other power than the King; a prerogative not delegated to the colonies. Hence, whatever coins, or substitutes for coins, were needed for their exchanges, had to come from England. Such, too, had been the position of the Spanish Crown; yet the necessities of Hispaniola, Puerto Rico and other Spanish possessions in America, had compelled their inhabitants, so early as 1586, to employ leather moneys in their dealings. Consult Lewes, Robert, 'Map of Commerce,' London 1711, p. 16.

Strengthened by this example, the attitude of the British colonies was laid down in 1665 no less positively than the Mixt Moneys decision. "They say," writes a commissioner of Massachusetts, "that so long as they pay (to the Crown) a fifth of the gold and silver (found or captured), according to the terms of the Charter, they are not obliged to the King, except by civility." (Sir J. R. Seeley, 'Expansion of England,' Norman Angell, citante, p. 376). Such became their justification for the Pine Tree coinage, for John Blackwell's bank and for colonial bills of credit.

The subsequent institution of American

colonial banks and issues of money are treated under appropriate heads.

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**2. THE FUNCTIONS OF BANKS.** The functions of banks may conveniently be divided into those relating to loans and investments, and those relating to money and the substitutes for coined money provided by banks. Savings banks, the simplest class of banking institutions, are entirely concerned with the first of these functions. The inducement of the interest return brings to them deposits, most of which remain undisturbed for long periods. Safety of principal and the income yield are therefore the considerations which determine the character of the investments of savings banks. State and municipal bonds, the bonds of established public service corporations with a good dividend record and real estate mortgage loans meet these requirements and make up the bulk of the investments of this class of banks. Through the facilities which they supply, thrift is encouraged and much income which otherwise might be wasted is made available to increase the total capital of the community.

**Loans and Investments.**— Income yield and safety are quite as important for other banks, but they must be sought in a narrower investment field. With them the quality of liquidness is also essential, since most of the funds which they employ are payable on demand, and large and unexpected payments must frequently be made. The deposits of these banks, commonly known as commercial or credit banks, consist mainly of cash resources which are being currently used for business purposes, or for personal expenditure. They are therefore subject to continued change, being constantly drawn upon by their owners. To meet this situation the funds of commercial banks must, in large measure, be employed in those investments which can quickly be converted into cash. In other words, they must be liquid.

Securities for which there is a broad market, such as most of those which are listed on stock exchanges, meet this requirement of liquidness. A far more important avenue for the employment of the funds of commercial banks, however, arises from the demand for short periods of time which comes to the banks from everyone engaged in active business. Working capital requirements in many lines of business vary with the seasons, and in every line of business with the volume of dealings. In satisfying these requirements the banks secure investments ideally suited to their own needs. At the same time a valuable service is rendered to the community. Capital is economized. It is not necessary for each business to supply itself permanently with sufficient capital to take care of its maximum requirements. The supply of capital is also made more elastic, and finally the trained foresight of the banker is exercised in selecting from the mass of would-be borrowers those who have manifested capacity to employ capital wisely and effectively.

Commercial banks, including the banking departments of trust companies, unlike savings banks, do not limit their loans and other investments to the funds received from depositors and shareholders. They lend their credit and thus create a large part of the funds utilized by borrowers. They are able to do this because they provide more or less generally acceptable substitutes for coined money. The bank note, the promise of a bank to pay money on demand, is obviously a credit instrument which is a substitute for money. But partly because of legislation limiting the power to issue notes, and even more because the check has been found more convenient for most purposes, the bank note has become a subordinate and rather special means of extending credit.

**Credit.**— Banks, of course, do not extend credit directly by issuing checks, since the check is an order on a bank to pay money, not its promise to pay money. Such orders are based upon obligations to pay money recorded on the books of the banks, and known as deposits. Clearly, a bank cannot lend its already existing obligations to pay money on demand.

It may indeed happen that a bank receives, let us say, $1,000 in money from a depositor, and is on that account in position to lend more than might otherwise be advisable; but even here it is not the deposit which it lends but either the $1,000 or (and this is far more likely) a new right to draw $1,000, both transactions — the receipt of the thousand dollars and the loan of the thousand dollars — creating absolutely similar deposit obligations.

It is the general use of the check that makes it possible for banks to create deposits through their lending operations. If borrowers made all payments with money, it would be necessary for them to withdraw the proceeds of their loans from the banks in the form of money. The business of commercial banks, like that of savings banks, would then be limited to the funds received from depositors and shareholders, and possibly some slight amount in addition thereto, since borrowers would presumably not immediately draw out the entire proceeds of their loans.

It may, however, be objected that even though the borrower does use checks, the bank will be obliged to make payment almost as speedily as if money were used. Checks do not circulate indefinitely; they are quickly presented for payment over the counter, or by other banks in which they have been deposited. Assuming that a bank were abruptly to double its deposit obligations by granting many new loans, it would unquestionably be confronted almost at once with heavy demands for payment of the largely increased number of checks that would certainly be drawn upon it. If, however, and this is the usual case, all the banks of a locality increase their loans at the same time with a consequent expansion of deposits, each bank will have a greater number of checks drawn upon it, but it will also receive from its depositors a greater number of checks drawn on the other banks. There would be a greater number of checks drawn, but not a correspondingly greater amount of cash needed in making settlements between the banks. This increase in loans, if made by the banks of a single locality, would probably lead to increased purchases from producers elsewhere, thus occasioning a balance of indebtedness against the local banks. Sooner or later currency would have to be shipped to the banks in other parts of the country, and this would soon prevent further expansion and might make contraction necessary; but again, if expansion of bank loans were country wide, this difficulty would not be experienced unless gold exports were stimulated, and even this contingency would not present itself if the expansion of credit were world-wide.

The general expansion of credit cannot continue indefinitely. An increasing volume of checks like an increase in the quantity of money has the same tendency to bring about an advance in prices. Rapidly rising prices invariably stimulate unhealthy business activities. Sooner or later the expansion of credit is checked by the deterioration in the average quality of the loans of the banks; failures become more numerous; confidence, not only in the future of business, but also in the banks, is weakened; a crisis breaks out followed by a period of depression; the volume of credit is then reduced through a slackening in the demand for loans, and through the liquidation of loans previously made.

However universal the use of checks may become, the individual bank does not on that account cease to be subject to constant demands for cash. A bank can exert no control over the use its depositors make of their accounts from day to day; checks deposited with it never exactly balance checks presented for payment; there will be wide variation, sometimes favorable, sometimes unfavorable. In the latter contingency reliance may be placed upon a speedy change in favor of the bank. More positive action is, however, certain to become necessary from time to time in the experience of every bank. The requirements of depositors will occasionally result in a succession of unfavorable balances, and further, every bank must face the possibility that unfounded rumors may subject it to a run. It is imperative, therefore, that a bank be able to pay large amounts of money on demand, and also be in position quickly to replenish depleted reserves. Its assets, or at least a considerable portion of them, must be of such a character that they can be quickly converted into money. To serve this purpose the same degree of liquidness in all assets is not a requisite. Immediate conversion into cash of a portion of the assets of a bank will ordinarily serve for the building up of reserve depleted on account of unusually large requirements on the part of depositors, and the gradual conversion of the remaining assets is all that can be deemed necessary for exceptional contingencies. Experience shows that a bank, all of whose assets can be converted into cash within a few months without loss, is altogether unlikely to be disturbed by lack of confidence, and should it be subjected to unfounded rumors, no difficulty is experienced in securing the necessary funds from other banks.

**Central Banks.**— In the development of commercial banking in most countries, there has been a distinct tendency toward the establishment of a special class of institutions, the primary function of which is to enable other banks to convert their assets into cash in periods of stress. These special banks, commonly known as central banks, maintain themselves in ordinary times in a position of great strength. They endeavor to exercise a restraining influence during periods of rapid credit expansion, but when the emergency presents itself grant loans freely. The Bank of England is the oldest and most famous institution of this kind. The very great advantages secured through its operations and those of similar institutions in other European countries led to the establishment in the United States of the Federal Reserve Banks in 1914. See FEDERAL RESERVE SYSTEM; FEDERAL FARM LOAN ACT; LAND CREDIT.

The bank notes which these institutions issue are as serviceable and acceptable for all domestic purposes as coined money. In many countries they are a legal tender. Consequently these central banks are able to supply the other banks with such amounts of cash as they may need to meet even the most severe contingencies. The banks are thus relieved of the necessity of resorting to general loan contraction, a method of strengthening themselves which cannot be carried far without involving

the business community in serious financial difficulties.

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**3. WORLD SYSTEMS — TYPES.** The banking institutions of Europe, with the increase of capital, the development of industry and the growth of international relations, have naturally conformed to these influences, with the result that there is an approximation everywhere to certain standards or types for the different classes of banking operations. Such differences in organization and practice as remain are not fundamental, and afford little occasion for comparison or argument as to their advantages or desirability, but are explained by their origin and the established customs of the people.

**Central Banks of Issue.**— In every country there is now a central bank, which is recognized to be the head of the system, and is charged with certain responsibilities. It is the fiscal agent of the government and the custodian of treasury funds; it issues the paper currency, carries the gold reserve and holds a dominating position in the foreign exchanges and the domestic credit situation. It is the final depository of the other banks of the country, and as a bank of re-discount, with the power of note-issue, it is expected to have at all times a reserve of available credit which will be used as needed for the support of the banking and general business situation. This reserve of credit is maintained by judicious use of the discount rate, which is raised and lowered to control the demand for credit. In all European countries judgment has been given in favor of confiding the power of note-issue to a single bank, but in Great Britain, Germany and Italy a few banks which were in possession of the right of note-issue when the present system was determined upon were allowed to retain a restricted right.

These central banks, by reason of the peculiar responsibilities with which they are charged, are required to confine their credit operations in the main to short commercial loans, usually not exceeding four months, which facilitate current trade and industry. Bills of exchange, arising out of specific transactions, and financing the movement of commodities to market, constitute the principal class of investments. Loans to the government, however, are authorized, and advances upon government securities and other approved collateral are made at a higher rate of interest and in limited amount. Nothing but gold and short commercial bills are considered a proper cover for note-issues.

The capital of these central banks, with the exception of the Russian Imperial Bank, is supplied by private shareholders, but in many cases the executive officers, and in the case of the Reichsbank the executive board, are named by the government. The Bank of England which is the oldest of the great banks, and which led in the demonstration of the most important functions of a central institution, is a completely private institution in its organization, but its policy is none the less governed by a sense of public responsibility. All of these institutions are bound to safeguard and promote the public interest, as their first consideration.

The most noteworthy difference in the operations of these banks has been in the management of the note issues. The Bank of England is authorized to issue notes to the amount of £18,450,000 upon the security of government bonds and other securities in its possession, but all issues in excess of this must be fully covered by gold in its vaults. This requirement, which was imposed upon it by the Act of 1844, was prompted by a belief that excessive note issues had promoted over-extensions of credit, the exportation of gold and the recurrence of financial crises. The effect was to make the note-issue absolutely fixed save as the stock of gold in the bank was increased or decreased. This restraint upon issues occasioned less inconveniences in England than it would have caused on the Continent, for the reason that even before 1844 the bank check had become to a great extent in England a substitute for the bank note. With the growth of the joint-stock banks the custom of keeping bank accounts and making payments by check has been steadily spreading, while on the Continent it remains the general custom to make payments in currency. The restriction of the Act of 1844 not only failed to prevent the recurrence of crises in England, but it actually hampered the bank in dealing with them to such an extent that in 1847, 1857 and 1866, when confronted by emergencies of this character, the Ministry requested the bank to disregard the provisions of the law, and Parliament in each instance afterward gave its approval by passing an act of indemnity. The situation upon each of these occasions was that public confidence in the general state of credit, and in the condition of certain private banking institutions, was shaken, but there was no want of confidence in the Bank of England. The latter, by disregarding the law, and issuing its own notes to the banks and firms which were able to give security, relieved the pressure and stopped the panic. This demonstration of the effectiveness of flexible note-issues under the control of a strong central banking institution has had a powerful influence in shaping the banking systems of other countries. In England no immediate change in the Bank Act was made, but an important change was made in the management of the bank. It was discovered that by raising the discount rate the tendency to over-expansion could be checked and the gold reserve of the bank increased, thus permitting an enlargement of credits, either by deposit accounts or note issues. Since 1866 this knowledge has been used so skilfully that the arguments in favor of a liberalization of note-issues have not been pressed. In 1914, however, following the outbreak of the European War, Parliament passed an act giving the Ministry authority to permit the Bank to issue notes without the statutory reserve.

The statutes governing the Bank of France fix a maximum limit upon its issues, but this has always been high enough to give practical freedom to the management, which within the limit named is without restraint. The framers of the law governing the Reichsbank introduced a novel feature, which has been since adopted in many countries, including the United States. This is a provision levying a

tax upon issues in excess of a named amount, which is assumed to be sufficient for normal requirements. This is accompanied, however, by another provision, requiring that at all times a minimum reserve of 33⅓ per cent against outstanding notes shall be maintained. The German tax upon excess issues is 5 per cent; in the United States, in applying the plan to the Federal Reserve banks, the tax is a progressive one, increasing as the percentage of reserve diminishes.

In all of the countries where the central banks are owned by private shareholders, the profits are divided with the Treasury or there are other compensations to the Treasury for the charter privileges.

**Commercial Banks and Discount Houses.** — In all countries the bulk of the banking business with the public is transacted by what are commonly called "joint-stock" banks, although the distinction between these banks and the central banks is not in the fact that they are joint-stock corporations but in their more private character. In England there must be included in any study of the commercial credit system, the discount houses or bill brokers, and the accepting houses which are auxiliaries of the banking system. These are specialists in credit, and intermediaries between the borrowers and the banks, although the discount houses accept deposits and pay interest on them. They borrow largely from the banks, and their chief function is to specialize in the several lines of trade. By doing this, and endorsing the paper they handle, they raise this paper to a higher grade of credit, which will command a lower rate of interest. In this difference between the rate which this paper would have to bear without their endorsement and the rate at which they place it with the banks, they find their compensation. The accepting houses perform a similar function in a different manner. It has long been the custom for the seller of goods to draw a draft on the buyer, payable at some date agreed upon in the future, which the buyer "accepts" as soon as it is presented by writing the word "accepted" across its face and signing his name thereunder. The draft when assigned by the drawer becomes two-name commercial paper, and is usually sold on the market. Evidently much depends upon the character of the names, and if the buyer is not well known he can afford to pay a commission to a house of high standing which will accept for him. This custom developed gradually, first within a trade where the houses knew each other, until it became a regular business. Back of these discount houses and accepting houses are the joint-stock banks, which are usually in the market for high-class paper, and back of all is the Bank of England, which is under obligation to always buy paper at some rate. When the war broke out, and paralysis fell upon credit, so important was it deemed that the fluidity of bills should be maintained, that the government stepped into the situation and guaranteed the Bank of England against loss in the purchase of pre-war bills.

The joint-stock banks of Great Britain carry the current accounts of merchants and manufacturers, although the Bank of England also does to some extent a general banking business. These banks lend to their customers and buy bills in the open market. They also lend upon collateral, and in recent years the practice has developed among them of accepting bills for houses with whose affairs they are familiar. This shows how the functions of the banks, the discount houses and acceptance houses overlap and dovetail, and how sharp is the competition in the credit field.

The joint-stock banks of Great Britain are organized under the General Companies Act. There are no requirements as to reserves or regulating the character of the business. The practices of the banks have been established by the lessons of experience and the teachings and writings of men recognized as authorities. It has become an accepted doctrine that bank investments must be of a temporary and liquid character, and that banks shall not take a proprietary interest in any business.

On the Continent, as in England, the joint-stock banks other than the central banks are organized under the general incorporation acts, and are quite free as to the character of business they may do. There are no requirements as to reserves and, in most countries, no governmental inspection or supervision. The joint-stock banks of Germany have developed their business on broader lines than perhaps any other corporate banking institutions, and with practically the freedom of private banking houses. This has been due largely to the rapid development of German industry and over-seas trade since 1880, and the demands which have fallen upon the banks in connection with it. The need for capital to finance growing and profitable industries has been before their eyes, and they have gone further than British banks are accustomed to go in supplying capital which could not be readily withdrawn. In doing this they have considered it advisable, instead of restricting their interests to loans, to take at times proprietary interests, evidenced by stock and to be represented in the directorate of such companies. They have organized companies to take over private business, and reorganized companies to increase their capital, offering the bonds and shares to the public over their counters, through their branches and upon the stock exchanges. The stock exchanges are for the most part controlled by the banks, and most of the transactions are through the banks. The head of the leading German joint-stock bank stated to the American Monetary Commission in 1908 that that bank had 50 members of the Berlin Stock Exchange to attend to its business. All of this is different from banking in England, and, as to relations with the stock exchange, from banking in the United States, but it is not so different as possibly at first sight appears from common banking practice in America, so far as capital advances are concerned. It is common knowledge that the banks of this country, particularly in the smaller towns, have had a large part of their assets in the form of loans which represent fixed investments. The country has been growing rapidly, every branch of industry has required more capital and the only source of supply has been the local credit institutions. As a result few American banks outside of the large cities would stand the theoretical test as to liquid conditions any better probably than the German joint-stock banks, and many of them not so

well. The American banks, however, have been prevented by law from taking proprietary interests. The German policy cannot be commended as a scientific policy, but, although there have been disasters from it, on the whole it probably has met the conditions existing in Germany, and promoted the development of industries more effectually than a more rigid system of banking would have done. The German banks which have come through the experience have been managed with great ability, have prudently built up large capitals, and in years immediately preceding they were in a condition as to liquid assets that was scarcely open to criticism. In an article written for the National Monetary Commission in 1908, Herr Mueller, a director of the Dresden Bank, and who served upon the Imperial Commission to consider a revision of the law regulating the Reichsbank, stated that in most of great German banks the principle was adhered to of not allowing the total amount of tied-up assets, such as bank sites and other fixed investments and interests, to exceed the bank's own paid-up capital, plus the capital accumulations which in the United States are called surplus and undivided profits. The great capital of these banks permits them even then to have large fixed investments.

In France there has not been the pressure for capital for industrial purposes which there has been in Germany, and the joint-stock banks or credit societies, as they are called, have confined themselves closely to the financing of current trade. In other countries of Europe the practice varies, and everywhere there is almost complete freedom from legal restraints.

**Investment and Mortgage Banks.**— The Credit Mobilier, founded in France in 1852, was the original of a type of investment banks. It sold its own debentures or collateral bonds against holdings in its own possession of various securities which it was a master spirit in promoting. It had a successful career for a time, but after about 15 years was forced into liquidation as the result of heavy losses. The type of the Credit Mobilier, the name of which signifies a mobilizing of credit, has been followed to some extent in many countries, but its mistakes have been a warning against the policy of using such an organization to promote new enterprises. The English investment companies issue their own debentures based upon securities which they have purchased, but their purchases are confined to the issues of established enterprises.

The mortgage banks of Europe are organized upon the above principle. The Credit Foncier, which has almost a monoply of the land mortgage business of France, is a semi-public institution, the capital being supplied by private shareholders, although originally the government gave it a subsidy. The governor and two sub-governors are appointed by the government. It is allowed to receive a limited amount of deposits and these are invested in commercial bills, but its principal business is lending upon mortgage, accepting either urban or rural estate as security. Against these mortgages in its own possession it issues bonds. These are issued in series without date for payment, but are called yearly as the amortization payments allow. They are called by a lottery and prizes are given with the drawings, the first prize being as much as 150,000 francs. This lottery feature is a factor in the distribution of the bonds, and accounts for the low rate of interest, usually 3 per cent, which they bear.

In Germany there are about 40 mortgage banks which pursue a similar business but the bulk of their loans are upon urban property. These banks are required by law to deposit their mortgages with a state comptroller, who then gives permission for the issuance of bonds against them. These banks operate upon an exceedingly small margin, the difference between the rate received upon mortgages and the rate paid upon bonds being only about one-fourth of 1 per cent.

Besides these joint-stock mortgage banks, there are the Landschaften, or mutual credit associations, which receive mortgages from their members and, holding them as security, issue their own bonds to the borrower which he may negotiate upon the investment market. This system was established by Frederick the Great in 1769, and originally designed for the benefit of the large estate-holders only, but it has been developed to include a branch for small properties, and also provide subsidiary companies which write insurance and grant temporary credits to members.

**Mutual Banks and Co-operative Societies.** — These are known in all the countries of Europe, but are most highly developed in Germany, where they are the common source of banking accommodations for small tradesmen and farmers. The Schulze-Delitzsch societies, so called for the founder and the town in which the first one was established, constitute the leading system. They receive deposits and pay interest upon them, and make short loans upon the promissory notes of members. They extend personal credit only to members but they may receive deposits from others and employ their surplus funds outside the membership. At their inception they were purely mutual societies with unlimited liability for the members, the theory of their organization being similar to that of the mutual insurance societies, or orders, now prevalent in many countries. The unlimited liability of all members helped them to get deposits, but was a deterrent to membership for those who did not want to borrow. Later, societies were organized which issued shares and in which the liability of shareholders was limited in various degrees. It might be double the par value of the stock, or greater, as determined by each society for itself. The societies are independent in their management, but have an association and a central clearing agency. The Schulze-Delitzsch societies do practically a commercial banking business. The Raiffeisen societies are upon much the same plan, and lend money upon several years' time, but the membership is chiefly among farmers. There is a central bank in Berlin for these societies, to which the state of Prussia has subscribed a capital of 50,000,000 marks. It is strictly a state institution. There are similar societies in other states of Germany. The total membership within the empire is nearly 2,000,000; paid-in capital and surplus funds, approximately 350,000,000 marks; deposits, about 2,335,000,000 marks. The Schulze-Delitzsch

and Raiffeisen systems have an extensive development in Austria.

In France the Credit Agricole Mutuel represents a development of the Raiffeisen idea. Small local societies had been doing business with moderate success, but the movement was given recognition and encouragement in 1897, when, upon a renewal of the charter of the Bank of France, a gratuitous loan of 40,000,000 francs, and also a certain share in the annual earnings of that institution, was exacted from it and diverted to the use of the agricultural banks. The law provided for the organization of district banks, which lend the available funds to the local societies, the distribution being made by a committee of public men, including the governor of the Bank of France. The peculiarity of the system seems to be that it depends chiefly upon the funds received from the Bank of France, which it is allowed to use gratuitously. These funds are loaned below the ordinary market rate, but as they are limited in amount the growth of the system is restricted. It lends only to provide temporary credit to farmers.

There are mutual credit associations in Russia, of limited liability, whose capital is created by the payment on the part of each member of a sum equal to one-tenth of the credit granted them. Associations of this kind may be established by the Zemstvos. In 1907, the sum total of these loans and discounts was approximately 245,000,000 rubles. A project is pending for the establishment of a central bank for these associations. See CO-OPERATIVE BANKING; FEDERAL FARM LOAN ACT; LAND CREDIT.

**Savings Banks, Municipal, Postal, Private.** — A system of municipal savings banks has its most important development in Germany and Russia. In both countries the banks are public institutions, supported by the credit of the municipalities and conducted under their supervision. The profits go to the surplus fund of the banks, or may be in part expended for public purposes, such as the support of hospitals, parks, etc. In Russia the municipal banks do a general banking business and also lend money on real estate security, but in Germany the investments are confined to trustee securities, as fixed by law, and to the purchase of a limited amount of commercial bills.

The municipal savings bank is to be found in other countries of Europe, and there are also stock company savings banks, but they are without special features. Mutual societies supply, to a great extent, the facilities for saving. Postal savings banks have been established in many countries, Germany being an exception, due to its high development of the municipal savings banks.

**Public Loan Banks.** — In France, in 1830 and in 1848, in Prussia in 1848, 1866 and in 1870, and in the German empire in 1914, the governments resorted to the establishment of public loan banks or, more properly, loan offices, as a means of facilitating in an emergency the flotation of public loans. The function of these banks was to serve in a subsidiary capacity to the central banks, by making loans upon collateral security. In Germany, in 1914, one of these banks was established in every city where there was a branch of the Reichsbank. They were authorized to make loans upon collateral or goods, and, in doing so, to issue notes to the maximum aggregate of 3,000,000,000 marks. These notes were not legal tender but were acceptable at the Reichsbank and made good as basis for note-issues by the latter. It was an emergency measure, designed to aid in mobilizing the financial resources of the nation. These banks are known as "Darlehnskassen."

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**4. INTERNATIONAL BANKING.** Prior to the enactment of the Federal Reserve Law (q.v.) under which National banks have obtained authority to establish branches in foreign countries, international banking upon the part of the United States had been mainly confined to investment banking, and efforts to place American securities in Great Britain and the countries of western Europe. The most ambitious effort to enter the commercial field had been made by the International Banking Corporation, chartered in 1902 by the State of Connecticut, which began business with a paid-up capital of $3,000,000 and surplus fund of $3,000,000. It had at that time 15 offices abroad, most of them in Asiatic countries.

**The Need of Foreign Banking Facilities.** —Although the slow development of American banking operations in the foreign field may be attributed in part to the fact that the national banking system, to which most of our large banking institutions in the past have belonged, until recently made no provision for such extension, it is also true that there has been little inclination among American bankers to so extend their business. The fact that branch banking has had small development within the United States will partially explain the seeming lack of interest in branches abroad. The comparatively few branch establishments that are maintained in this country, with few exceptions, are located in the same city with the head office, and the great bulk of the banking business is done by independent, locally owned, institutions which have but a single office. Our people have been inexperienced in branch banking, and not accustomed to entrusting large powers to scattered officials at great distances.

The chief explanation, however, for the indifference of American bankers to international opportunities is to be found in the same general situation which accounts for the slow development of American interest in foreign investments and foreign trade, to-wit: the all-absorbing needs and attractions of the home field. There has been no inducement for banking capital to go from the United States to other fields for the mere profits of commercial banking. All foreign fields are already occupied by domestic banking institutions, which are likely to have the preference for purely domestic business, and by British or European banking corporations which are more or less allied with other important investments in the same countries, and with interests that are active in trade with these countries. It has been evident

that American banks abroad would have little reason for their existence unless they were serviceable to American trade and American capital in the same manner that British and German banks have been serviceable to the trade and investments of those countries.

With the development of this country, the growth of its industries and the accumulation of capital, the attitude of its people toward trade and investments abroad has been changing. Our exports no longer consist almost exclusively of natural and crude products. The United States has become the leading producer and a heavy exporter of steel and machinery, and is rapidly increasing its exports of a great variety of manufactures. At this stage banking facilities abroad become a factor in the development. If American banks in foreign countries require for their prosperity that there shall be American trade with those countries, so does American trade have need for an extension of its own banking facilities.

The services which a banker can render for his client in foreign countries are in most particulars the same that he renders at home, but obviously there is greater dependence upon them abroad than at home, and there are special services incidental to the fact that goods are delivered and collections are made in foreign countries. The distances are great, mails are slow and cables costly; the habits and customs of the people are different, trade conditions are different, the language is usually different, and the chances of misunderstandings and disagreements are more numerous than in trade at home. There is great help to the exporting house in having an interested representative on the ground where deliveries and collections are made, and next in efficiency to his own exclusive agent is the branch office of an American bank. Collections may be, indeed, made through a domestic bank, or through a branch office of one of the European banks, but it is not to be expected that these institutions will feel the same interest in promoting the trade that will be felt by an American bank, which realizes that its own future is involved in the development of American trade. It is more than possible that the interests of the American exporter may clash with the interests of older and closer clients of a European bank, and in such instances the invoices and terms of important transactions may become known to competitors. In any event, there is a lack of the alert, interested attention that arises from a vital common interest, and from the direct connection through the home bank. There is likely to be a clearer presentation of the exporter's case through the latter channel.

One of the most important services that a bank can render is that of supplying information relative to credits. In many countries this information is difficult to obtain, and those who have it give it up with reluctance, especially in reply to written inquiries. Replies are vague, elusive and unsatisfactory. It cannot be expected that this class of information will be given frankly and accurately by mail to strangers. No other source can be so trustworthy as a locally established bank which is linked up in every interest with the trade which it is serving. Credits are changing constantly; information which is good at one time may be misleading a few months later; the exporter in another country requires an allied advisor upon the spot who will not wait for inquiries but volunteers his counsel. Moreover, he wants a banker with a knowledge of the credits who will give him assistance in carrying them. In short, he wants the service which his own banker is accustomed to render at home extended to the foreign trade.

The service of the American branch bank does not end with attention to business placed in its hands; it is equally interested in creating new business. It makes itself familiar with all lines of trade; it studies the import and export trade of the country in which it is located, with a view to developing trade with its home country; it takes note of opportunities and reports them to the home institution, which places the information where it will be likely to promote action.

The import trade of growing or developing countries consists to a great extent of equipment and construction materials, for use in new works designed to increase the production of the country, or to improve its facilities for handling the products. These purchases represent investments rather than consumption, and very often they represent an investment of foreign capital, as in the construction of railways and other public utilities, or manufacturing plants. The investments of Great Britain and Germany in South America are very large, and they have been made usually by sending out machinery and equipment which were the product of their home shops. Their manufacture supplied work for the home people and when converted into investments abroad they not only yield good returns but they create new demands for repairs, replacements, extensions, etc.

These investments abroad have not in years past been attractive to the people of the United States, because there were abundant opportunities, as good as any in the world, for similar investments at home. No other country was growing so fast in population as the United States, and so long as there were extensive natural resources to be opened up here it was doubtful policy to place investments abroad. But the United States is no longer a new country; the main railway lines have been constructed, every section of the country is undergoing development, the more easily tilled lands are now under cultivation, the timber lands have advanced greatly in value, the mineral resources are being worked. Both population and wealth are increasing rapidly, but the country has reached the stage where raw materials, once cheap, are becoming dear and affecting the cost of manufactures and the cost of living. The manufacturing industries are affected both by the increasing cost of raw materials and by the increasing cost of food, clothing and other necessities which affect wages. Already the United States has become one of the principal importing nations of wool and hides, and it is probable that our consumption of these articles will steadily increase faster than the home supply. We are also consumers in vast quantities of many articles which we do not produce at all, among which are coffee, rubber and tin, which are obtainable in South America. In short, we have reached the point in our own development where we can advantageously spare some of our capital

to develop the dormant resources of countries not so far advanced as ourselves. There will be an economic gain to ourselves and to the world community in doing so, just as there was an economic gain to New England and the United States from the use of New England capital for the development of the Western States of this country. This investment of United States capital in other countries will be guided and stimulated by the development of international banking facilities with headquarters in this country.

**Short Loan and Commercial Bills.**— There is yet another class of international banking which is comparatively new in this country but which is developing, and that is the class of banking which has made London the chief market of the world for short loans and commercial bills. Here again the defects of our national banking in the past have militated against us, National banks not being permitted to accept drafts for future payment. Even our own foreign trade, both exports and imports, has been financed through bills upon London. Most of the time there has been no real loss to this country by this process, because it has been possible to carry the drafts at a lower rate of interest in London than in New York. In the future, however, this situation is likely to be different, not so much because of a probable change in the London situation as because of the changes effected here by the Federal Reserve system. In the past the financial banking reserves of the United States have been kept in the large National banks of New York city, which, by custom and as a result of competitive conditions, paid a uniform rate of 2 per cent upon them. This interest burden made it incumbent upon them to keep the funds employed upon the most favorable terms possible, and this employment was commonly found in loans on stock exchange collateral. The Federal Reserve system transfers the banking reserves to the Federal Reserve banks, and forbids their employment in loans upon stocks or bonds. They can only be used in rediscounting paper arising out of commercial transactions. Coincident with the creation of this great fund, restricted to commercial paper, has come permission for National banks to accept paper arising out of international trade, a permission which extends not only to our trade with other countries but to trade between all countries. These acceptances are the most desirable paper available for the Federal Reserve banks, and as they pay no interest on deposits, and large earnings with them are subordinated to the policy of having liquid assets and developing a great discount market, it may be expected that the rate on this class of paper will hereafter be as low in New York as in any market of the world. The availability of the New York market for trade bills ultimately payable elsewhere will of course be affected by other factors as well as the discount rate, and particularly by the general position of New York in the world's exchanges, but it is and can be confidently predicted that with the resources of the Federal Reserve system behind it, and with the United States developing as a creditor country, New York in the future will play a much more important part in international banking than in the past.

As a result of the European War, and the closing of European markets to foreign loans, an important aggregate of loans to foreign governments has been made in the American market. Since there is reason to believe that capital will continue to accumulate rapidly in the United States, and there will be less difference in interest rates between New York and European markets than in the past, it is probable that New York will continue to be a factor in transactions of this class. The development of any country in international banking is dependent finally upon the relations of its people to international affairs. There must be an important body of traders and investors with international interests and cosmopolitan views. See CO-OPERATIVE BANKING; FEDERAL RESERVE SYSTEM (article 12); FOREIGN EXCHANGE (article 15); WORLD SYSTEMS (article 3).

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**5. FOREIGN EXCHANGE.** Foreign exchange may best be described as the system by which payments are made between countries having different monetary systems. The terms "Exchange" and "Foreign Exchange" are also used as meaning the drafts drawn by merchants and bankers resident in one country upon merchants and bankers resident in another.

**Origin.**— Concerning the origin of the foreign exchange system as it exists at present there is a good deal of doubt. The best opinion is that the system as we now have it came into existence early in the Middle Ages as a result of the commercial dealings between the northern Italian republics and the Levant. Venetian merchants, for instance, purchasing goods in Alexandria, found that on account of the prevalence of piracy in the Mediterranean payment for such goods in gold was extremely hazardous. It being the case that the merchants of Alexandria were also purchasers of goods in Venice, a system was devised whereby, instead of actual gold being shipped back and forth, merchants in Venice having money owed to them from Alexandria were able to receive it from other merchants in Venice who had payments to make in Alexandria. Gradually it came about, as a result of these arrangements, that Alexandria kept balances in Venice and vice-versa. Payments instead of being made by means of actual gold shipments came gradually to be paid by drafts drawn on such balances.

**The Principle Stated.**— A clear understanding of the basic principle underlying foreign exchange transactions may probably best be had from consideration of an actual international transaction. A merchant in Memphis, Tenn., we will say, has sold a hundred bales of cotton to a spinner in Liverpool, England. For the merchant in Memphis the important thing is to realize upon his sale, at the earliest possible opportunity, United States currency or credit at bank. This payment he can receive in two ways. Either he can draw a draft upon the buyer of the goods in Liverpool in sterling (the currency of the buyer) and sell such draft in Memphis or New York at the current rate of exchange for American dollars, or (2) the buyer of the cotton in Liverpool can send to the merchant in Memphis a draft drawn on some point in the United States

and payable in United States currency. Whichever way the transaction is arranged, the desired result will be obtained that the seller of the goods in Memphis immediately receives payment in bankable funds.

The banking machinery requisite for the conversion of sterling drafts drawn, for instance, in Memphis, into United States dollars, or for the furnishing of drafts drawn in sterling to American merchants who have payments to make abroad, is relatively simple. It consists simply of a number of banks and bankers with the necessary facilities for purchasing the drafts drawn on foreign points in foreign currencies offered them, and for selling to their clients such drafts drawn on foreign points in foreign currencies as may be desired. It must, however, be clearly understood that the foreign exchange banker is not merely a broker in bills, buying bills from parties who have them to sell and selling the same bills to other parties who want to buy them. Having bought exchange drawn in a foreign currency on a foreign point, the foreign exchange banker does not resell those same bills, but instead sells a draft made by himself upon his correspondent bank abroad. The balance abroad out of which these bankers' drafts are paid is being continually replenished by remittances from this side, of foreign exchange which the banker buys in the regular course of business.

The foreign exchange banker, in other words, maintains a depositary abroad with whom he deposits the bills of exchange he buys and upon whom he draws the drafts which he sells his clients. Daily these balances are being drawn upon and replenished. At all times they are maintained at a certain point, that, of course, depending upon the standing of the banker and the extent of the foreign exchange business in which he is engaged. Some foreign exchange bankers carry balances at only one or two of the more important foreign money centres. Others carry balances at as many as 20 or 30 foreign points.

As a result of the arrangements they have with their foreign correspondents and the balances they carry abroad, foreign exchange bankers at primary points are always in a position to buy any exchange which may be offered them, and to sell any exchange which may be required. A large packing house in Chicago, for instance, may have made a shipment of meat to Amsterdam and as a result be offering its drafts drawn in guilders at 15 days' sight upon the buyer of the goods in Holland, or upon some Dutch bank designated by him. Of these drafts the packer, if his standing is good, will have no difficulty in disposing at whatever happens to be the current rate of exchange at the time for bills of this character. Some banker will readily take them off his hands, knowing that he, the banker, can send the bills to his correspondent bank in Amsterdam for credit of his account, later drawing his own bills upon the balance thus created. Very possibly at the time that he buys the bills drawn against the meat shipment, the foreign exchange banker knows of a place where he can sell drafts drawn by himself at a rate of exchange which will show him a profit on the transaction. Nor does it make any difference whether the drafts he buys are drawn against meat or wheat or copper or whether they are payable at sight or at 15 days' sight or at 90 days' sight. All is grist that comes to the foreign exchange banker's mill. His account with his foreign correspondent is a melting pot into which he can put bills of exchange of every variety, the whole appearing after collection and discount as a cash balance upon which he can draw his own drafts.

The profit made by the foreign exchange banker comes from the fact that he can regularly secure a better rate of exchange for the drafts drawn by himself, which he sells to his clients, than he has to pay for the mercantile bills of exchange which he buys from other clients and with which he is continually replenishing his balance abroad. Between bankers' bills and mercantile bills, however good the latter may be, there is always a difference in the rate of exchange. Between the bill drawn by the banker of good standing and the merchant of good standing this difference is comparatively slight, but as between the bill of the banker and the merchant whose paper is not so well known, although it may be perfectly good, there is a very considerable difference in the rate. It is just here that the foreign exchange banker makes the bulk of his profits. The bill of this mercantile house he knows is perfectly good, but because the paper is not particularly well known it does not perhaps command the full market price. This paper the banker buys knowing that it is good and that it will be paid upon maturity, and against this paper he sells his own bills at a considerably higher rate of exchange.

Aside from the trading on rates described above, there are, of course, great speculative possibilities in the foreign exchange market for those who choose to take them up. By buying bills, for instance, and accumulating a large balance abroad without selling his own drafts against such balance, the banker puts himself in a position where he will greatly profit through any rise in rates which may take place —or vice-versa. Foreign exchange bankers, too, sell exchange for future delivery and contract to purchase drafts at fixed times in the future, at rates which they figure will show them a profit. These, of course, are only one or two examples. The opportunities for speculative operations in foreign exchange are practically unlimited.

The par of exchange between two countries having different monetary standards as, for instance, Great Britain with the pound sterling and the United States with the dollar, is the price of the gold unit of one country expressed in the currency of the other. In a new gold pound sterling (sovereign), for instance, there is an amount of gold which, at any sub-Treasury in the United States, is worth $4.8665. This sum is, therefore, the par of exchange between Great Britain and the United States.

From this par of exchange the rate fluctuates upward and downward according to the supply and demand. If American merchants or bankers have large payments to make on the other side and drafts drawn in foreign currencies are in great demand, it naturally follows that the price in dollars which must be paid for each pound sterling, mark or franc, as the case may be, will increase (that the rate of exchange will

rise). If, on the other hand, a large amount of drafts drawn on foreign points in foreign currencies are being offered for sale to bankers engaged in the foreign exchange business, it stands to reason that less American dollars will be paid for each pound sterling, mark or franc, as the case may be (that the rate of exchange will decline).

The principal influences having a tendency to cause the rate of exchange at any given point to rise are as follows:

*Heavy Imports of Merchandise.*— Merchandise imported must be paid for — usually by means of a draft drawn in the currency of the country from which the goods are coming. If, thus, imports run heavy, there is necessarily a big demand for drafts to send over to the shippers from whom the goods are coming. The natural effect is to cause a rise in the rate at which bankers are willing to sell such drafts.

*Heavy Imports of Securities.*— Exactly as merchandise imported into the country must be paid for, so securities imported into the country must be paid for. The moment a market begins to repurchase on a large scale its securities held abroad, or to purchase foreign securities, there is set up a strong demand for bills of exchange drawn on the market where the buying is being done to settle for these securities. A time when New York, for example, is buying stocks heavily in London, is apt to be a time when the demand for sterling drafts is so great as to give the sterling exchange market a strong upward tendency.

*A Decline in Money Rates Below the Level Prevailing at Other Important Foreign Centres.*— As money rates decline there is a strong tendency for capital to seek points at which a better rate is offered for its use. Transfer of capital can be effected only through remittances of exchange to points where the capital is to be employed. A period of extremely low money rates at a point like New York, for example, with London offering a better rate for capital, is likely to be a time when there is a big demand for bills of exchange with which to make remittances to London.

The principal influences tending to cause a decline at any given point in exchange rates are as follows:

*Heavy Exports of Merchandise.*— Payment for merchandise exported from the United States is made largely by drafts drawn in the currency of the country to which the goods are shipped, upon the buyer of the goods or upon some bank abroad designated by him. A time when merchandise is moving freely out of the country is a time when a large amount of such drafts are being offered to foreign exchange bankers. The result is, naturally, to cause a decline in the rate which bankers are willing to pay for such drafts.

*Heavy Exports of Securities.*— Securities shipped out of the country, as is the case with merchandise, are generally paid for by means of a draft drawn by the seller upon the buyer. A time when, for any reason, large amounts of stocks or bonds are being shipped out is, naturally, a time when large amounts of exchange are being drawn and offered, with a consequent decline in the rate of exchange.

*A Rise in the Rate for Money Above That Prevailing at Other Primary Points Abroad.*— Just as banking capital tends to flow out of a market where the money rate is declining, so it tends to flow into a market where the money rate is rising. Let money rates at New York, for instance, rise considerably above those prevailing in London or Paris, and immediately foreign capital begins to flow this way and American bankers begin to recall to this market for their own use a substantial part of the funds they have been carrying abroad. This recalling of balances is effected by drawing drafts on correspondents abroad and by offering these drafts for sale in this market, the effect being to lower the rate of exchange.

There is, however, a limit beyond which, under normal circumstances, the rate of exchange between two countries having the gold standard cannot rise, and a limit beyond which it cannot fall.

The extent to which the exchange can rise is limited by the point at which it becomes cheaper for parties, having payments to make abroad, to send the actual gold than to send a banker's bill drawn in the currency of the place where the payment is to be made. If, for instance, a merchant in the United States having a payment to make in Great Britain finds that each pound sterling of the draft he wants to buy will cost him $4.89, he can go to any United States sub-Treasury, purchase the exact amount of gold which when laid down abroad will yield one pound sterling, and send it to the other side at a total cost to him of considerably less than $4.89. The American merchant's idea being to discharge his obligation abroad with the least possible expenditure of American dollars, he will elect to send the actual gold rather than to purchase and send a banker's draft.

The extent to which the exchange can fall at a point like New York, for instance, is limited by the point at which a new gold sovereign laid down in New York yields net a greater amount of dollars and cents than each pound sterling of a prime banker's draft drawn on London would yield. A New York bank, for example, has money on deposit in London which it wishes to withdraw to New York. It will sell its drafts only down to the point at which that process yields more dollars than if gold were imported. Below that point the rate of exchange cannot fall.

The above, however, applies only where there is a free interchange of gold between markets. If for any reason the natural flow of gold one way or the other is obstructed or restricted, exchange may rise far above or fall far below what would be the normal gold export or gold import point. By interfering with the natural outflow of gold from London through raising the discount rate and through buying up all available supplies of gold bullion in the market, the Bank of England, for instance, has on numerous occasions brought about a condition where the rate of exchange in New York on London fell far below the gold import point without any gold being shipped to the United States. Similarly the rate of exchange both at Berlin and at Paris not infrequently rises far above the point at which gold can be profitably exported for the simple reason that, through the interference of the governmental authorities, no gold for export can be obtained.

Under such circumstances those who have remittances to make can make them only by means of bills of exchange and must pay whatever price is asked.

Gold exports and imports, it must be borne in mind, are exclusively in the hands of the bankers because it is only the banker who has the facilities necessary for dealing in bullion. Upon the exchange rate rising, for instance, to the gold export point, the shipments of gold which take place are not made by merchants but by bankers who through thus replenishing their balances abroad keep themselves in a position to sell to merchants the needed bills of exchange. The rate on London at New York, for example, rises to $4.88, at which rate conditions at the time happen to be such that a remittance made in the form of gold and a remittance made by means of a bill of exchange cost the sender exactly the same amount of dollars and cents. At this point bankers will begin to ship gold knowing well that they will be able to sell their drafts against the balances thus created at a slightly higher rate than $4.88, for the simple reason that merchants, having no facilities for handling bullion, are willing to pay, say, a quarter of a cent in the pound sterling in order to avoid the necessity of having to ship the actual gold themselves. The rise in the exchange to the gold export point thus means the shipping of gold on the part of bankers, and the consequent creation of a fresh supply of bills of exchange out of which mercantile needs are satisfied.

What has been said above applies only to the exchange relationship between countries having the gold standard or the gold exchange standard, i.e., where the government, as in the case of the Philippines or in India, guarantees a gold value to the silver medium of exchange. Where the exchange relationship is between a country on the gold standard and a country on the silver standard, the dominant factor in the rate of exchange is the price of silver. A rise in the price of silver in China, for instance, overshadows everything else as an influence upon the rate of exchange on London, and invariably causes a fall in the price at which the pound sterling will exchange for the local silver currency. Conversely a fall in silver invariably brings about a rise in the exchange.

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**6. INVESTMENT BANKING.** Investment banking is the system by which investment capital is made available, (1) for the uses of industrial enterprise; (2) for civil loans, i.e., loans to municipalities, states and countries. An enterprise is in need of capital, or a state or county, for instance, needs money for the construction of roads or public buildings. It is the function of the investment banker to stand between his clients who have money to lend and the corporation or municipality which wants to borrow, and to see that the needed capital is provided.

The whole system of investment banking as constituted to-day presupposes the ability on the part of those engaged in it to draw capital from their clients for whatever purpose required. The X Y Z Railroad, we will say, which operates a system of electric lines, decides to spend a million dollars on certain improvements which, it feels, will greatly increase its revenue. The road not having that much free cash on hand appeals to some investment banking house for the money, offering to pay for it such-and-such a rate of interest and, as security, to give to the lenders a mortgage on the property to be acquired. This proposition having been made, the investment banker proceeds to make an independent examination, and, his engineers having satisfied themselves as to the safety and productivity of the loan, informs the railroad that he stands ready to advance the capital required — in other words, that he will purchase from them at a certain price such-and-such an amount of bonds or stock issued under such-and-such conditions. It is not, of course, his own money which the investment banker figures on advancing. Familiarity with the markets, the price of capital and the standing of the concern which wants to borrow enables him to estimate at just about what price he will be able to dispose of the securities to be issued. For a certain type of stock or bond issued by a certain type of borrower, he knows his clientage will be willing to pay just about such-and-such a price. He figures, for instance, that, counting all costs of retailing, he will be able to parcel out a million dollars' worth of high grade bonds at a net price to him of 98. A price somewhere between 90 and 95 would, therefore, be about what he would offer the railroad for the bonds. The difference between what he paid for the bonds and what he got for them by distributing them among his clients would constitute his net profit on the transaction.

In theory, a corporation wanting to borrow money by selling new securities advertises in the investment market for bids and sells the securities to the highest bidder. In practice, nearly every large railroad or industrial concern has its own bankers to whom the business is invariably given. For this there is good reason. The investment house which is going to interest its clients largely in the securities of a corporation assumes a certain moral obligation. To be safe, in other words, the banker has got to be close to the property he is financing and to remain close to it and in close touch with its affairs. He cannot, therefore, spread his efforts in too many directions. Gradually, in consequence, each investment banking house gathers around itself a certain number of enterprises with whose affairs it is particularly familiar and whose securities it becomes particularly fitted to handle.

The methods by which the investment banking house, having purchased and paid for a block of new securities, proceeds to distribute these securities and thus reimburse itself, vary according to the nature and size of the issue. If the issue is a very large one, the chances are that the bonds will be resold not to the individual investment public direct, but rather to a syndicate of smaller investment houses, by whom the final distribution will be effected. If, on the other hand, the issue is a moderate

one in size, the chances are against its passing through any other bankers' hands. The house purchasing the bonds in that case is far more likely to offer the bonds direct to its own clients.

There are a number of ways in which this is done. Circularizing and direct personal salesmanship are the two most important. Every investment banking house of any account has a large list of actual and prospective clients. To this list (which in the case of some of the larger houses runs up to 20,000 or even 30,000 names) the new securities are offered. By no means, however, is the offering necessarily limited to the existing list. Advertising, both in newspapers and magazines, to-day plays an important part in investment banking. Through it countless new names are each year added to investment bankers' lists and through it vast amounts of new securities are each year being actually sold.

In the investment banking business the day of large profits is a thing of the past. It used to be the case that, for the banker bringing out the securities even of a corporation of established credit, there was a profit running often in excess of 10 per cent. The establishment of public service commissions all over the country and the greater degree of supervision now exercised by the Interstate Commerce Commission over the railroads' finances has put a stop to that. Industrial and manufacturing concerns, not being subject to such supervision, are in some instances still being made to pay heavily for their money, but even here the profits of the investment banker are nothing like what they used to be.

Investment banking is by no means to be confused with promotion — that is to say the providing of capital for new and untried enterprise. To the investment banker of reputation and who is in the business to stay, the primary consideration is by no means the amount of the profit he is going to make, but rather the safety and desirability of the investment he is offering his clients. A clientele financially strong, and which can be relied upon at the banker's suggestion to absorb any issue of securities offered, is an asset which can be acquired only by years of careful, patient and intelligent effort. The true investment banker, having established such an outlet for any new securities he may want to handle, takes the greatest care that no securities reach clients which may impair their opinion of his own integrity and judgment.

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FRANKLIN ESCHER.

**7. THE CLEARING HOUSE.** The principle of offset — the application of credits to debits and the settlement of any balance remaining — as applied to banking is defined as the clearing principle. Economically it is an evolution of the ancient system of barter by which goods were exchanged for goods, the trade being made even by giving something "to boot"; that is, to equalize any difference in the value of the goods exchanged. In money exchanges this principle is not involved since the amount of money given can always be made to equalize the value of the goods taken. As soon as negotiable instruments or substitutes for value are employed, this inequality of exchange must again be provided for as is the case with original barter, except that money instead of some other commodity is used to make the trade equal.

**History.**— The clearing principle now in operation between and among banks must have been employed as early as the general introduction of bills of exchange into the commercial world. The origin of the first clearing house in the modern sense is, however, clouded in some obscurity. London claims the distinction of having the original bank clearing house, which was organized about the year 1773. It was the custom of the early London banks to send messengers from one to the other, presenting checks and other bills payable at their respective counters for payment in money. Two of these messengers, so the legend goes, formed the habit of meeting daily at a convenient coffee-house where they would exchange their items, paying the difference with cash which they had brought along for the purpose. Although this plan saved considerable time and the handling of much money, the characteristic dislike of the conservative English banker for anything varying from established custom asserted itself and the offending clerks who had thus violated precedent were properly disciplined. The merits of the idea having finally prevailed, the London Bankers' Clearing House was established and is said to be the first such exchange conducted in a building set aside exclusively for that purpose.

Owing to the unsettled state of finance and the lack of a coherent banking system, it was not until 1853 that the first clearing house was established in the United States, the New York Clearing House having been founded in that year. Albert Gallatin, an eminent financier, had proposed such an organization many years earlier, but without success. Following the example of New York similar associations were formed in other large cities and immediately after the National Bank Act had taxed State bank note issues out of existence (1863–64), the deposit-and-check system of banking brought into general use so large an increase of personal checks that clearing houses multiplied very rapidly. The so-called Suffolk system used by the Boston banks from 1818 to 1864 was a clearing plan adopted to facilitate the exchange and redemption of New England State bank notes, but its functions and methods were not those of the true clearing house in the generally accepted meaning of the term.

**The Work of the Clearing House.**— The clearing house is a plan, rather than a tangible entity, although in one sense the term is used to designate the building in which the actual exchanges take place, and in another the voluntary association of the banks which comprise the membership. As between any two banks, there will be a simple offset of checks which each holds against the other, payment of the difference or balance being either deferred and included in the following day's transactions or else settled daily in cash. When three or more banks are involved, and the offset is accomplished through a clearing house, the operation

of exchange is identical, except that each member bank assumes in accounting that all checks payable by its neighbors are drawn upon but one fictitious institution — the clearing house — and the bank in turn receives all checks on itself from the same source. This result is accomplished by putting all checks on each other member of the clearing house in separate packages, listing each total on the credit side of a sheet opposite the name or clearing house number of the bank on which they are drawn. The grand total is then recorded on the bank's books as "Exchanges for the Clearing House."

At a fixed time all the banks meet at the clearing house through their representatives, who exchange the packages, one clerk moving around the outside of a series of desks, each of which is occupied by another clerk from the bank whose clearing house number is shown on a brass plate. This clerk records in the debit column the amount of each package of checks received from the distributing messengers. The result is that while each messenger has come to the clearing house with checks on every other member, he returns with checks on his own bank only, and this without having made a visit to each institution. The difference between the total amount brought to and taken away from the clearing house is the balance, and since the mere exchange of the items does not alter the sum of them, the total debit balances due to the clearing house by the members who have brought less than they have received must equal the sum of the credit balances which the clearing house owes the members who have brought more than they have received. This casting of total debit and credit balances is done by the manager of the clearing house and is the proof of the correctness of the exchange. With the exception of the manager, who may be an officer of one of the member banks, all the clerical work at the clearing house is done by the bank clerks who make the exchanges. The exchange of the packages and the subsequent accounting consumes very little time, 10 to 15 minutes being sufficient to list the totals and strike the balances.

A few hours are allowed the banks after the exchange has taken place for the settlement of balances. The general hour for the exchange is 10 A.M. and at noon all debtor banks must pay their balances in acceptable funds to the manager of the clearing house. At 1 o'clock all creditor banks send to the clearing house and receive payment for their credit balances. Unpaid items are accounted for directly between the two banks involved and are not returned through the clearing house. The clearing house acts merely as the agent for the debtor banks and is not liable in any way for the payment or genuineness of the checks which have been exchanged. Thus in a few minutes' time vast numbers of checks representing millions of dollars are presented and later settled for with very little actual money being necessary. The ratio of balances to clearings depends upon the relative size of the banks making the exchanges and as a general average for all clearing houses it may be set down at about 10 per cent. In New York city, which has the most notable clearing house in the country, the average extending over a period of years is less than 5 per cent.

Various methods are used in settling balances, the object being to avoid as far as possible the use of money. Thus drafts may be used by the debtors which the manager of the clearing house deposits with one member, drawing his own drafts against this deposit in favor of the creditor banks. In many clearing houses actual currency is used, but in others, gold and other money is deposited in the vaults of the clearing house and certificates similar in nature to warehouse receipts are issued in denominations of $5,000 or more. By using these certificates, which cannot be negotiated except by member banks, counting and recounting large sums of money is avoided, nor is there danger of loss in carrying the money through the streets.

In acting as clearing houses for their members as the Federal Reserve banks are required to do under the terms of the Federal Reserve Act, the same accounting principles are employed, with due allowance for the fact that the member banks are separated within their own districts by at least one day's mail time from their clearing house, in this instance the Reserve Bank. The checks are sent by mail instead of by messenger as in the case of a local clearing house and the balances are adjusted by debits and credits to accounts with the Reserve Bank.

The 12 Federal Reserve banks also use the clearing principle in making settlement with each other through the operations of a Gold Settlement Fund held at Washington under the supervision of the Federal Reserve Board. Each reserve bank keeps a portion of its gold reserve in the form of United States gold certificates on deposit in the Settlement Fund. Once a week each reserve bank telegraphs the amount owing by it to every other reserve bank. These totals are then offset and the balances are adjusted by debits and credits in the fund. Settlements representing the exchange transactions between the different sections of the country are thus effected by a change in ownership of the gold which is not in any physical way disturbed. Before the establishment of this National Clearing House it was necessary to transfer large amounts of gold and currency from one section of the country to the other as the trade balance varied in accordance with the seasons.

**Government.**— In order that the transactions of the clearing house may be properly conducted, certain regulations are adopted. Rules govern the nature of items which may be passed through the exchanges, how they shall be endorsed, the hour of clearing and settlement; fines are imposed for lateness or errors; and the kinds of money which may be used in paying debit balances are agreed upon. This necessity for regulation has led to further clearing house development in which the banks act as an association for uniformity and the common good. Many clearing houses receive out of town checks from their members and make collection. In this way better terms and quicker returns can be secured than if each bank acted independently. Country checks handled by a clearing house are collected and not cleared. The clearing house in this case operates as the agent of all its members and deals with the out-of-town banks much as the member banks do in

collecting checks through individual arrangement with their country correspondents.

Several of the larger clearing house associations employ their own examiners who work independently of State or Federal officials. These local examiners not only make the usual audit and examination of the cash and books of the member banks, but they also make a careful investigation of the banks' loans and discounts from the viewpoint of the credit risk. In this way each member bank is assured that other banks in the city are being carefully managed and in position to secure expert advice if it is needed. The records of the clearing house examiner are confidential and cannot be secured by any of the banks. All detail reports are given to the officers and directors of the bank examined and their attention is called to any assets which are of questionable value. The judgment of the clearing house examiner is usually to be depended upon in this connection, since indirectly he represents the combined credit skill of the officers of all the banks which he investigates. It is a matter of record that no depositor has lost a dollar through the failure of a bank subject to clearing house examinations. This system of examination was first adopted by the Chicago Clearing House in 1906.

It is expected that many of the activities of clearing houses in the United States will gradually give way in favor of the Reserve banks as these institutions develop in their supervisory capacity. The clearing function, however, for which all clearing houses are primarily established, is of sufficient importance in banking to insure the continued existence of bank clearing houses under any present or future banking system.

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**8. BANKING IN THE UNITED STATES.** Prior to the adoption of the Constitution in 1787 there was but little banking done, because one of the chief elements of that business — a sound and stable monetary system — was lacking, the Continental currency having depreciated to the point of practical worthlessness. With the enactment of the law of 2 April 1792, establishing a mint and regulating the coins of the United States, a new situation was created. The Constitution itself prohibited the States from coining money, emitting bills of credit and from making anything but gold and silver coin a tender in payment of debts. Upon Congress was conferred, by the same instrument, sole authority to coin money and to regulate the value thereof.

**Early Banking in the United States.**— The first banks in the United States owed their origin to Robert Morris and Alexander Hamilton. As early as 1763 Morris had conceived the plan for establishing a bank to assist in developing American trade, and in 1779 Hamilton had proposed the organization of "The Company of the Bank of the United States." Before their plans were put into execution, however, a bank was organized, conceived in a patriotic spirit, but destined to be short-lived.

In 1780, moved by the distressing situation in which Washington's army was then placed, Thomas Paine, who was a clerk in the assembly of Pennsylvania, wrote to Mr. Blair McClenachan, suggesting a subscription to support the army with necessaries, and enclosed $500. At a meeting in Philadelphia on 7 June 1780 subscriptions amounting to £400 in specie and £103,360 in Continental money were raised. On 17 June another meeting was held, and it was resolved to increase the subscription to £300,000 Pennsylvania currency, and the full amount was soon subscribed by 92 persons, Robert Morris and Blair McClenachan each subscribing £10,000. This association was called the Pennsylvania Bank. In the preamble to the resolutions of Congress accepting this patriotic offer of assistance it was recited that the subscribers had "established a bank for the sole purpose of obtaining and transporting the said supplies with the greater facility and despatch. And, whereas, on the one hand, the associators, animated to this laudable exertion by a desire to relieve the public necessities, mean not to derive from it the least pecuniary advantage," etc.

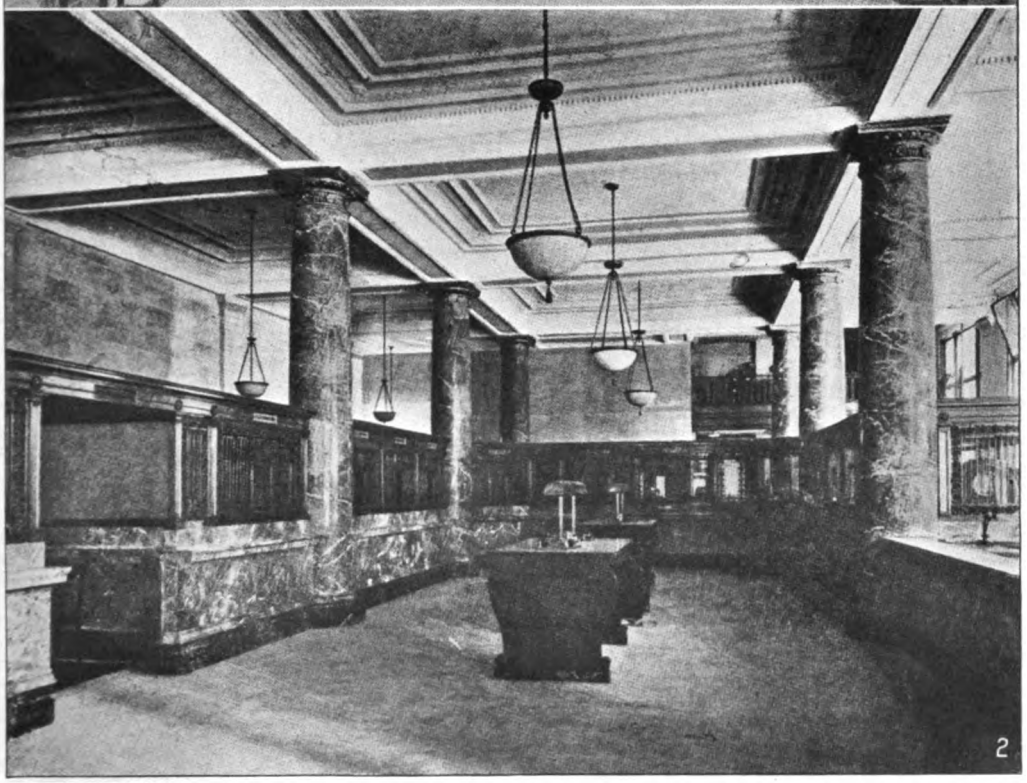
The directors were authorized to borrow money on the credit of the bank and to issue notes bearing 6 per cent interest. All the money borrowed or received from Congress was to be used for purchasing supplies for the Continental army and otherwise aiding the patriots. Congress, it was expected, would reimburse the bank for these expenditures. The bank commenced business 17 July 1780 and continued open for about a year and a half. Its affairs were finally wound up in the latter part of 1784. This bank was of great assistance in procuring supplies for the army that could not have been procured otherwise without the greatest difficulty. It furnished the army 3,000,000 rations and 300 barrels of rum.

The first bank, as we have seen, had its origin in patriotic impulses, and its establishment appears to have been due to the suggestion of Thomas Paine.

This institution was not a modern commercial bank, however, and it was reserved for Morris and Hamilton to become the founders of the bank whose career was to be perpetuated and that was to live in the history of the country as the first regularly incorporated commercial bank. Like its predecessor, it was established to aid the cause of American independence. Years after its president, writing to the Comptroller of the Currency, referred to this fact by saying: "This bank was created avowedly to aid the United States."

Early in 1780 Hamilton wrote to Morris strongly urging the establishment of a national bank as one of the steps necessary to put the country on a sound financial footing and to aid in carrying on the war. Hamilton was then but 23 years old, but his views revealed the possession of unusual financial talents which were to win him distinction in later years. His purpose in forming the bank was to unite the moneyed classes in the support of the government credit. The bank was to be a great trading and banking corporation in private hands, but backed and partly controlled by the gov-

## BANKS



Courtesy The Gorham Co.

1 First National Bank, Youngstown, O. (Albert Kahn, Archt.)
2 Second National Bank, Boston, Mass. (Parker, Thomas and Rice, Archts.)

# BANKS

Courtesy The Gorham Co.

1 First National Bank of Denver, Denver, Colo. (Weary & Alford Co., Archts.)
2 United States Trust Co., Washington, D. C. (B. Stanley Simmons, Archt.)

ernment. Hamilton's suggestions were renewed in later letters to James Duane, a member of Congress from New York, and to Isaac Sears of New York. To the latter Hamilton wrote: «We must have a bank on the true principles of a bank.» In the spring of 1781 he again wrote to Robert Morris renewing his suggestions for a national bank. Morris was then Superintendent of Finance, having been elected to that position 20 Feb. 1781. Hamilton favored a bank with a capital of not less than $3,000,000. Morris, while coinciding with his views in the main, thought a more modestly capitalized institution would better meet the requirements of the times. He accordingly drew up a plan which he presented to Congress on 17 May 1781. It provided for the establishment of the Bank of North America, for which a subscription of $400,000 was to be raised, payable in gold or silver. Its bank notes, payable on demand, were to be receivable for duties and taxes in every State. The plan having been approved by Congress, the Superintendent of Finance published it on 28 May, accompanied by an address, in which he said:

«A depreciating paper currency has unhappily been the source of infinite private mischief, numberless frauds and the greatest distress. The national calamities have moved with an equal pace, and the public credit has received the deepest injury. The exigencies of the United States require an anticipation of our revenue; while at the same time, there is not such confidence established as will call out, for that purpose, the funds of individual citizens. The use, then, of a bank, is to aid the Government by their moneys and credit, for which they will have every proper reward and security, to gain from individuals that credit which property, abilities and integrity never failed to command, to supply the last of that paper money which, becoming more and more useless, calls every day more loudly for its final redemption, and to give a new spring to commerce, in the moment when, on the removal of all its restrictions, the citizens of America shall enjoy and possess that freedom for which they contend.»

The facts above referred to in regard to the depreciation of the paper currency are substantiated from the following extracts from a newspaper of that period:

«The Congress is finally bankrupt. Last night a large body of the inhabitants, with paper dollars in their hats, by way of cockades, paraded the streets of Philadelphia, carrying colors flying, with a dog tarred, and instead of the usual appendage and ornaments of feathers, his back was covered with the Congress paper dollars. This example was directly followed by the jailer, who refused accepting the bills in purchase of a glass of rum, and afterwards by the traders of the city, who shut up their shops, declining to sell any more goods but for gold and silver.»

The purchasing power of government paper was at an end, and Congress turned to a bank, organized on a specie basis, for relief from the evils of a depreciated currency.

On 1 Nov. 1781 the Bank of North America was organized, Thomas Willing being chosen president, and a few days later Tench Francis was elected cashier. It began business 7 Jan. 1782, and has continued from that time until the present, a worthy memorial to the genius and wisdom of its founders, an honor to the city of Philadelphia and always a strong supporter of the public credit.

The Bank of North America had a charter from the Federal Congress and from the States of Delaware and Pennsylvania. In 1864 it entered the national banking system. In view of its age, and other circumstances connected with its history, it was permitted to retain its original title. All other national banks are required to have the word «National» as a part of their name.

In the early financial history of the United States no two names occupy a more distinguished place than those of Morris and Hamilton. The contributions of the former to relieve the sufferings of the patriots attest alike his patriotism and humanity, and he also possessed financial genius of a high order.

Alexander Hamilton, as the first Secretary of the Treasury under the Federal Constitution, laid the foundations of our financial system and firmly established the public credit. On his accession to this high office it was to be expected that he would soon attempt to carry into effect his views in regard to a government bank.

Hamilton's first aim was to strengthen the Federal Union, and one of his plans for doing this was to put the public credit beyond question and thus gain confidence for the new government. He favored the payment of the foreign and domestic debt and the assumption of the State debts by the Federal government. The first proposition was readily agreed to, the latter was carried with some difficulty, and the proposal to assume the State debts was at first defeated, but was afterward carried by an alliance formed between Hamilton and Jefferson, by which Hamilton agreed to use his influence to secure the permanent location of the capital on the Potomac in return for Jefferson's assistance in getting votes in Congress for the debt assumption plan. This compact was effectual. Hamilton did not consider the location of the capital as a question involving any essential principle, while he regarded the financial policy he had marked out as being necessary to the welfare of the country. Jefferson and he were both members of the cabinet, and the differences which were to divide them in later years had not yet developed.

The Bank of New York, located in New York city, is another historic institution. It commenced business on 9 June 1784. The constitution of the bank, which was written by Alexander Hamilton, provided that the capital stock should consist of $500,000 gold or silver. Though the bank commenced business in 1784 it did not get a charter from the New York legislature until 21 March 1791.

The Massachusetts Bank was incorporated at Boston 7 Feb. 1784 and commenced business on 5 July of that year, $253,500 of its capital of $300,000 being paid in.

The incorporation of these banks marks the change from the period of depreciated Continental and State currency to a system of bank notes redeemable in specie. This is the beginning of an important epoch in American banking history.

FIRST BANK OF THE UNITED STATES

Hamilton as Secretary of the Treasury proposed a national bank in his report for 1790. Contrasting the superiority of the proposed bank to an emission of United States notes, Hamilton pointed out that the right to issue paper of this character was "so certain of being abused that the wisdom of the government will be shown in never trusting itself with the use of so seducing and dangerous an experiment."

The proposed plan was arranged under 24 heads. The capital of the proposed bank was fixed at $10,000,000; one-fourth of all the private and corporate subscriptions was to be paid in gold and silver and three-fourths in United States stock bearing 6 per cent interest. Two million dollars were to be subscribed by the United States, a loan of equal amount being made in return by the bank, which was to be reimbursed in 10 equal annual instalments in money or in the bonds of the government in a manner similar to that pursued by the British government upon the organization of the Bank of England; or, as Mr. Hamilton described the operation, by "borrowing with one hand what is lent with the other." The board of directors of the bank was to consist of 25 persons, not more than three-fourths of them to be eligible for re-election in the next succeeding year. The bank had authority to loan on real estate security, but could only hold such real estate as was requisite for the erection of suitable banking houses or should be conveyed to it in satisfaction of mortgages or judgments. No stockholder, unless a citizen of the United States, could be a director and the directors were to give their services without compensation. The bills and notes of the bank were made receivable in payment of all debts to the United States. The total amount of debts which the corporation might at any time owe in any way, except for moneys actually deposited in the bank for safe-keeping, was never to exceed $10,000,000 and if this limit was exceeded the directors under whose administration the excess might occur were to be personally liable for the amount. The corporation was allowed to sell the evidences of the public debt subscribed to its stock, but was not to purchase any public debt whatever. Notes were allowed to be issued, payable to any person or persons, assignable and negotiable, or to bearer assignable by delivery. The directors were permitted to establish offices for discount and deposit only, wherever they should think fit in the United States. A report of the condition of the bank was to be furnished whenever the Secretary of the Treasury required it, but not oftener than once a week. The charter was to expire 4 March 1811.

Although the bill for chartering the bank was opposed by Madison and Jefferson, as well as by Randolph, the Attorney-General, Hamilton's wishes prevailed and the bill for chartering the bank became a law 25 Feb. 1791.

**Operation of the Bank.**— The bank went into operation very soon after the act authorizing it became a law, and before the government subscription of $2,000,000 was paid; a dividend of 4 per cent was declared in July 1792. The manner of paying the government subscription was as follows: The President drew bills of exchange on Holland, where money borrowed in that country under the laws of 4 and 12 Aug. 1790, was lying available. These were handed to the bank and the latter issued $2,000,000 in its stock. Immediately the bank loaned $2,000,000 in its own bills to the Treasury and received $2,000,000 of United States stocks bearing 6 per cent interest, and payable in 10 equal annual instalments beginning in 1793. The bank was very well managed and was of great benefit to the government and the people at large. It assisted the Treasury with loans whenever called on and it forced the State banks to keep their issues within reasonable bounds. It received and disbursed more than $100,000,000 of public moneys without the loss of a dollar.

Under the requirement that a report of the condition of the bank should be furnished to the Secretary whenever required by him, but not oftener than once a week, the Treasury records do not show that any formal reports were ever made to the department. The only balanced statements to be found showing the condition of the bank are two, which are contained in letters of Albert Gallatin, Secretary of the Treasury, communicated to Congress on 2 March 1809 and 24 Jan. 1811, respectively. The reports are as follows:

FIRST BANK OF UNITED STATES — STATEMENT OF CONDITION

| Resources | January, 1809 | January, 1811 |
|---|---|---|
| Loans and discounts | $15,000,000 | $14,578,294 |
| United States 6 per cent. stock | 2,230,000 | 2,750,000 |
| Other United States indebtedness | ..... | 57,046 |
| Due from other banks | 800,000 | 894,145 |
| Real estate | 480,000 | 500,653 |
| Notes of other banks on hand | ..... | 393,341 |
| Specie | 5,000,000 | 5,009,567 |
| Total | $23,510,000 | $24,183,046 |
| **Liabilities** | | |
| Capital stock | $10,000,000 | $10,000,000 |
| Undivided surplus | 510,000 | 509,678 |
| Circulating notes outstanding | 4,500,000 | 5,037,125 |
| Individual deposits | 8,500,000 | 5,900,423 |
| United States deposits | ..... | 1,929,999 |
| Due to other banks | ..... | 634,348 |
| Unpaid drafts outstanding | ..... | 171,473 |
| Total | $23,510,000 | $24,183,046 |

The average dividends of the bank from its organization to March 1809 were at the rate of 8½ per cent per annum. The 5,000 shares of $400 each owned by the United States were disposed of in the years 1796 to 1802 at a considerable profit, 2,220 shares having been sold in the last-mentioned year at a premium of 45 per cent. According to the treasury records the government subscription, with the addition of the interest which was paid by the United States on stock issued for it, amounted to $3,200,000, while there was received by the treasury in dividends and from the sale of the bank stock at various times $3,773,580, the profit realized by the government being $573,580, or nearly 28.7 per cent upon the original investment.

In addition to the Act of December 1791, chartering the bank, four supplementary acts were passed by Congress in reference to it: one on 2 March 1781, which varied the manner in which the capital stock was to be subscribed for and paid in; two passed in 1798 and 1807, respectively, having reference to

counterfeiting its notes and papers or otherwise defrauding it; and one in 1804 permitting the establishment of offices of deposit and discount in the Territories and dependencies.

Application for a renewal of the charter of the bank was made in 1808. Secretary Gallatin, in his annual report for 1809, favored the renewal, with certain modifications, but after a protracted debate in both Houses of Congress the application of the bank was rejected.

The banking house and most of the assets of the Bank of the United States, including over $5,000,000 in specie, were purchased by Stephen Girard, of Philadelphia, who at once started the Girard Bank, which, converted to a National bank in 1865, continues to this day. The purchase and transfer came about in this way. In 1810 Girard had large balances with the Barings, amounting to £116,701. In 1811 the indebtedness of that firm to him was nearly £200,000. The difficulties in trade with the Continent were great and the Barings were in danger. Mr. Girard sent two agents to London to do what they could to withdraw the amount due and transmit it to America. Part of the funds were invested in goods and part in American 6 per cent stocks and United States Bank shares, then at about $430⅓ (£98 10s.) per share. The Barings, it will be remembered, had purchased a large amount of the bank stock from the United States government in 1804. The stock Girard had purchased gave him a large interest in the bank; and, in the spring of 1812, he found by consultation with George Simpson, the cashier of the old institution, that the bank building and cashier's house could be purchased for $120,000, less than one-third of its cost. The purchase was made, the property was transferred to Girard, and his new bank commenced operations on 12 May 1812, with $1,200,000 capital, which was afterward increased to $1,300,000.

Much of the business of the Bank of the United States was transferred to Girard's Bank, together with $5,000,000 in specie. The officers and employees of the old bank were retained at the same salaries. Girard bought the stock expecting the charter of the Bank of the United States to be renewed. If this had occurred he would have made a fortune by the rise in stock. But, as it was, he saved himself by the purchase of the old bank. He did not use the old circulating notes, but paid out notes of State banks till his own were printed, which bore the device of a ship under full sail and an American eagle.

The stockholders of the Bank of the United States received, on the final winding up of the institution, $434 per share, which, with dividends averaging about 8 per cent per annum, made it no bad investment. Many, however, had bought and sold at much higher rates some years previous to the expiration of its charter. The United States government sold to the Barings for a premium of 45 per cent in 1802, or $580 per share.

In view of the success of the bank, it is interesting to quote some of the expressions in regard to it, appearing in the debates in Congress. Mr. Boyd considered the bank "a great swindle"; Mr. Desha referred to the recharter proposed as one to "foster a viper in the bosom of our country"; Mr. Wright said the charter was "a cancer upon the body politic." In the press it was referred to as "an hydra," "a cerberus," a "gorgon," a "vulture" and a "viper." These expressions typify the prejudice then existing, and which still exists, in this country against concentrated banking power, and all the denunciations above quoted can be matched from debates and newspaper articles on banking at the present day.

### SECOND BANK OF THE UNITED STATES.

Early in 1814 proposals were made to organize a national bank, and on 10 February of that year a bill was introduced in the House for the incorporation of such an institution with a capital of $30,000,000, but the bill failed, and other attempts were unsuccessful also, until finally a bill based upon the suggestions of Mr. Dallas, the Secretary of the Treasury, became a law by the signature of President Madison 10 April 1816.

Mr. Dallas on 6 Dec. 1815, sent to the speaker of the House a proposition relating to the national circulating medium. He considered four questions: Whether it was practicable to renew the circulation of gold and silver coins; whether the State banks could be successfully employed to furnish a uniform currency; whether a national bank would be more advantageously employed for the purpose; and, last, whether the government itself could supply and maintain a paper medium of exchange. In regard to the State banks, while acknowledging the valuable services and liberality of some of them, he said: "The truth is, that the charter restrictions of some of the banks, the mutual relation and dependence of the banks of the same State, and even of the banks of the different States, and the duty which the directors of each bank conceive they owe to their immediate constituents upon points of security or emolument, interpose an insuperable obstacle to any voluntary arrangement upon national considerations alone for the establishment of a national medium through the agency of the State banks." He concluded against the possibility of specie alone, against government issues, and finally that a national bank was the best and perhaps the only resource. At the request of the National Currency Committee of the House, Mr. Dallas, on 24 Dec. 1815, enclosed an outline of a plan for a national bank. He proposed now a bank for 20 years with a capital of $35,000,000, $7,000,000 of which was to be subscribed by the government. This might be augmented to $50,000,000 by Congress, the increase to be divided among the States. It was to be located in Philadelphia, and could establish branches or employ State banks as branches. It was to pay specie at all times, and not to suspend without authority of Congress. In lieu of the loan, it was to pay the government a bonus of $1,500,000.

A bill was introduced embodying Mr. Dallas' suggestions on 26 Feb. 1816. The debate was chiefly upon a motion to reduce the capital to $20,000,000. In this debate Mr. Clay spoke in favor of the bank. Two reasons he gave for changing his position were that, in 1811, when he voted against the recharter of the old bank, he was instructed by the legislature of his State to do so, and at that time he did not deem a national bank as necessary in a constitutional sense. He then relied upon the State banks as being able to meet all the wants of

the government financially; it now appeared that the general government could no longer depend upon them. A national bank seemed to him now not only necessary, but indispensable. At one time Philadelphia was struck out and New York selected as the principal seat of the bank by a vote of 70 to 64, but this was reconsidered and Philadelphia replaced. The bill finally passed the House without important amendment, on 14 March 1816, by a vote of 80 to 71. It was introduced in the Senate on 22 March and passed on 3 April with one or two amendments that, when the bill came to the House next day, Mr. Calhoun pronounced to be slight. Upon 5 April they were concurred in and on 10 April the bill received President Madison's signature.

**Provisions of the Charter.**— The charter was limited to 20 years, expiring on 3 March 1836. The capital was fixed at $35,000,000, $7,000,000 of which was to be subscribed by the government, payable in coin or in stock of the United States, bearing interest at 5 per cent and redeemable at the pleasure of the government. The remaining stock was to be subscribed for by individuals and corporations, one-fourth being payable in coin and three-fourths in coin or in the funded debt of the United States. Five of the directors were to be appointed by the President, and all of them were required to be resident citizens of the United States, and to serve without compensation. The amount of the indebtedness, exclusive of deposits, was not to exceed the capital of the bank. The directors were empowered to establish branches, and the notes of the bank, payable on demand, were receivable in all payments to the United States. The penalty for refusing to pay its notes or deposits in coin, on demand, was 12 per cent per annum until fully paid. The bank was required to give the necessary facilities, without charge, for transferring the funds of the government to different portions of the Union and for negotiating public loans. The moneys of the government were to be deposited in the bank and its branches, unless the Secretary of the Treasury should otherwise direct. No notes were to be issued of a less denomination than $5, and all notes smaller than $100 were to be made payable on demand. The bank was not directly or indirectly to deal in anything except bills of exchange, gold or silver bullion, goods pledged for money lent, or in the sale of goods really and truly pledged for loans, or of the proceeds of its lands. No other bank was to be established by authority of Congress during the continuance of the corporation, except such as might be organized in the District of Columbia with an aggregate capital not exceeding $6,000,000; and, in consideration of all the grants of the charter, the bank was to pay to the United States a bonus of $1,500,000 in three annual instalments.

Mr. Dallas, whose first plan for a national bank was so unceremoniously rejected, was appointed Secretary of the Treasury by Mr. Madison in February 1814. His predecessor, Mr. Gallatin, who had been appointed Commissioner to Russia to negotiate a treaty of peace and commerce with Great Britain and treaty of commerce with Russia, left the country in May 1813, and the Treasury without a head. In June the Senate refused to confirm Mr. Gallatin as commissioner, and Madison still regarded him, though absent, as head of the Treasury. Under these circumstances Mr. Mason moved a resolution in the Senate on 24 Jan. 1814, declaring the secretaryship of the Treasury vacant, but the subject was postponed inasmuch as it was authoritatively announced that the President would appoint a secretary in a few days, which promise was fulfilled.

**The Bank Commences Business.**— Section 22 of its charter required the bank to commence operations by the first Monday in April 1817. The bank went into operation on 7 Jan. 1817. This was at the worst stage of the monetary troubles, beginning with the suspension of specie payments in 1814 and continuing until the general crash in 1819 and 1820. At this time lands and agricultural products had fallen to one-half the prices which were readily obtainable in 1808 and 1810, and to one-third of the value they possessed when the excessive indebtedness of the people was incurred — namely, during the inflation years of the State banks. The contraction of the circulation and the general failures of the State banks began in 1818. The second United States Bank, therefore, came into existence on the very verge of a great monetary crisis. When it commenced business the first instalment of capital, amounting to $1,400,000 in specie and $7,000,000 in United States stocks, had been paid. The subscription had been opened 7 July 1816. The payment of the second instalment of capital became due on 7 Jan. 1817. The law required this to be paid $10 in specie and $25 in United States stock or specie. It appears, however, that instead of requiring the stockholders to pay in this instalment from outside sources, the bank on 7 January began to discount the notes of stockholders upon the pledge of their stock to the amount required to pay the specie part, and in some cases to the full amount of both specie and United States stock required to make up the whole instalment. After a time discounts were made to the full value of the stock, which enabled the stockholders not only to pay up in full, but even to draw out what they had first advanced. The discounts were made in the bank's bills, which were considered equal to specie. Of the $28,000,000 capital subscribed by individuals $7,000,000 was to have been paid in specie and $21,000,000 in United States stock. The bank appears to have actually received nearly $2,000,000 in specie and $13,872,610 in public stocks. The difference represents about the amount made up by stocks. The bank, therefore, was forced to import the coin it needed, and up to November 1818, had thus acquired $7,311,750 in specie at an expense of $525,297.

**Speculation in Bank's Stock.**— The directors of the new institution appear to have made every effort to boom the stock in the market. Not only did they "facilitate" the payments of the instalments by discounting to the full amount of the stock, but they also encouraged trading in stock by authorizing the renewal of stock notes as they fell due and by permitting the purchaser to substitute his note, secured by the purchased stock, for that of the previous holder. Further than this, they soon began to authorize discounts on pledge of stock to its

full market value. One could purchase bank shares without the advance of a cent. It was only necessary to apply for a loan upon the security of the shares to be bought, and pay for the stock with the proceeds. When the price of shares rose sufficiently a sale could be made and the difference pocketed. It appears that the president, William Jones, and a number of directors and officers, especially those connected with the Baltimore branch, had direct personal interest in these transactions, which they did not pretend to conceal, but considered as lawful private concerns. The stock rose as high as $156 per share in August 1818, but soon after fell to about $110. While there were no doubt gross irregularities in its management, for which the bank was soon to suffer, it did much good even under these disadvantages. It received upon deposit from the United States Treasury the notes of State banks, and in return furnished a uniform currency. It transferred funds whenever needed, and the amount paid in in United States stocks had its effect in enhancing the credit of the government loans. It exerted sufficient influence upon the currency to make itself very unpopular with the State banks during the financial crisis of 1818, although those even who were hostile to it admitted its policy toward the State institutions had been marked by great consideration and lenity. In fact, on this point its enemies were obliged to fall back on the charge that by this very lenity and consideration it had led the State banks to unduly extend their business, had drawn them into temptation and made them unfit to meet the financial storm. It did not accustom the local banks to pay specie soon enough, and by putting off the evil day found them unprepared at last. Up to August 1818 the bank redeemed its notes, both of the parent bank or its branches, at any of its offices where they might be presented, but after that date redeemed its bills only at the office which put them in circulation. This change was made because the bills were largely used for purposes of remittance, and in the localities where a sound local currency was most needed the bills were gathered up and sent off, leaving the field to the inferior State bank circulation. A more important reason was that the change enabled the bank to realize a profit by the sale of its drafts. This change was persevered in and afterward afforded the basis of President Jackson's assertion that the bank did not furnish a uniform currency.

Although some losses were sustained by the Baltimore branch of the bank, the institution went along without encountering any particular political hostility until 1829, when President Jackson in his annual message to Congress raised the question of the constitutionality of the bank, claiming at the same time that "it has failed in the great end of establishing a uniform and sound currency." He suggested that if a national bank was necessary one might be devised founded upon the credit of the government and its revenues, thus avoiding the question of constitutionality.

At the beginning of the administration of General Jackson, says Mr. Parton, the Bank of the United States was a truly imposing institution. Its capital was $35,000,000. The public money deposited in its vaults averaged six or seven millions; its private deposits six millions more; its circulation twelve millions; its discounts more than forty millions a year; its annual profits more than three millions. Its capital was, therefore, about one-quarter, and its loans, circulation and deposits about one-fifth of the whole amount held and issued by all the banks of the country. Besides the parent bank at Philadelphia, with its marble palace and 100 clerks, there were 25 branches in the towns and cities of the Union, each of which had its president, cashier and board of directors. The employees of the bank were more than 500 in number, all men of standing and influence, all liberally salaried. In every State of the Union and in many foreign nations of the globe were stockholders of the Bank of the United States. One-fifth of the stock was owned by foreigners. One-tenth of its stock was held by women, orphans and trustees of charity funds. Its bank notes were as good as gold in every part of the country. From Maine to Georgia, from Georgia to Astoria, a man could travel and pass these notes at every point without discount, and it is said that in London, Paris, Rome, Cairo, Calcutta, Saint Petersburg and other prominent cities, the notes of the Bank of the United States were within a fraction more or a fraction less than their value at home, according to the current rate of exchange. They could actually be sold at a premium at the remotest commercial centres. It was not uncommon for the stock of the bank to be sold at a premium of 40 per cent. The directors of the bank were 25 in number, of whom five were appointed by the President of the United States. The bank and its branches received and disbursed the entire revenue of the nation.

The first real attack upon the second Bank of the United States originated in a political controversy. Jeremiah Mason had been elected president of the branch of the bank at Portsmouth, N. H. On his accession to this position he instituted some reforms in the management which rendered him unpopular. This gave to Levi Woodbury, a political antagonist, an opportunity to demand his removal. The charges against Mason and others of like nature affecting the branches in Kentucky and Louisiana were transmitted by Secretary Ingham to Nicholas Biddle, president of the bank. The attacks upon Mason and the Portsmouth branch continued and grew more violent, and the political hostility of President Jackson was increasing. In his message for 1831 he again called the attention of Congress to the question of recharter. A bill with this object in view passed both Houses of Congress in the following year, but was vetoed by President Jackson on 10 July.

Jackson's inconsistency in his message and in his veto are thus summed up. In 1829, when the charter had yet seven years to run, he calls attention to the necessity of prompt action as to the recharter in order to avoid precipitancy. In 1830 when the charter had yet six years to run, he advocates timely action. In 1831, there being five years more, he reiterates his previous advice; but, in his veto in 1832, when four years only remain to the bank, he says there is no need of haste.

But although the veto was exceedingly vul-

nerable from almost every standpoint, it served its purpose in arousing the popular feeling against the bank and in favor of Jackson. Benton, who in the Senate defended the veto against the attacks of Webster, Clay, Calhoun and Ewing, voiced the whole spirit of the party he represented when he said:

"You may continue to be for a bank and for Jackson, but you cannot be for this bank and for Jackson. The bank is now the open, as it has long been the secret, enemy of Jackson. The war is now upon Jackson, and if he is defeated all the rest will fall an easy prey. What individual could stand in the States against the power of that bank, and that bank flushed with a victory over the conqueror of the conquerors of Bonaparte? The whole Government will fall into the hands of the moneyed power. An oligarchy would be immediately established, and that oligarchy in a few generations would ripen into a monarchy."

The bill for the recharter could not secure the necessary two-thirds vote for the passage over the veto. Nor did the supporters of the bank fully realize, even then, the effect of the President's opposition. They thought the people would be disgusted at Jackson's unreasonable attitude. Nicholas Biddle wrote to Clay that he was delighted with the veto. The campaign of 1832 was fought on the bank issue. It was the hero of New Orleans against the "monster monopoly." It was Jackson like a hero of romance fighting against "Old Nick's Money" and "Clay's Rags." The bank, having foolishly gone into politics, was defeated and Jackson again elected. The support of the people was at once claimed for all past and future warfare on the bank, and the result of the election sealed its doom. The attack promised on the stump began at once.

In his message in 1832, after his re-election in November of that year, the President again fulminates against a recharter of the institution, recommending that the seven millions of stock of the bank held by the United States should be sold, and going further intimates that the United States deposits in the bank were not safe. He either was or affected to be impressed with the idea that so long as the bank was the holder of the public funds it might use them to corrupt Congress to secure an extension of its existence. In consequence of the message bank stock fell from 112 to 104. A Treasury agent who made an examination of the institution reported it solvent and the stock went back to 112. Congress did not coincide with the views expressed by the President, and refusing to sell the bank stock, passed a resolution, by a vote of 110 to 46, of confidence in the safety of the deposits.

The President had made up his mind to cripple the bank by taking away from it the public deposits, and the then Secretary of the Treasury, Mr. Duane, refusing to carry out his wishes, he was superseded by Attorney-General Taney, who on 26 Sept. 1833, issued the order for the removal. In consequence of this act, the following resolution was introduced in the Senate by Mr. Clay: "That the President, in the late executive proceedings in relation to the public revenue, has assumed on himself authority and power not conferred by the Constitution and laws but in derogation thereof." This, known as the "censure resolution," was passed by a vote of 26 to 20. On 28 March, 1834, this resolution was expunged from the records of the Senate.

Jackson's opposition, on one ground or another, continued, and the bank gave up all hopes of obtaining a new lease of life, but on 13 Feb. 1836, 13 days before the expiration of its charter, obtained a charter from the legislature of Pennsylvania. The subsequent career of the bank was short and disastrous. A constantly increasing amount of loans on stocks gradually tied up its resources, so that by 1840 it was found that the assets of the institution consisted chiefly of all kinds of internal improvement stocks and bonds as well as of State stocks and bonds and bank stocks.

But the United States was not a loser by the bank's failure.

The $7,000,000 of stock held by the United States, previous to the change to a State charter, was paid back in full, and the government realized a handsome profit on its investment, as will appear by the following statement derived from the records of the Treasury Department:

| | | |
|---|---|---|
| Bonus paid by bank to the United States | | $1,500,000 00 |
| Dividends received from the bank | | 7,118,416 29 |
| Proceeds of stock sold and other moneys received from the bank | | 9,424,750 78 |
| Total | | $18,043,167 07 |
| Subscription to capital stock paid in United States. 5 cent bonds | $7,000,000 | |
| Interest paid by United States on same | 4,950,000 | |
| | | 11,950,000 00 |
| Profit on investment | | $6,093,167 07 |

The history of the United States Bank under its Pennsylvania charter, subsequent to the crisis of 1837, was a most disastrous one. It suspended specie payments during the ticklish period from 1837 to 1841 as often as other State banks, and finally went down under circumstances that might, with prudent management, have been turned to a successful result. It made three several assignments in 1841 to secure various liabilities, the last and final assignment being on 4 September of that year.

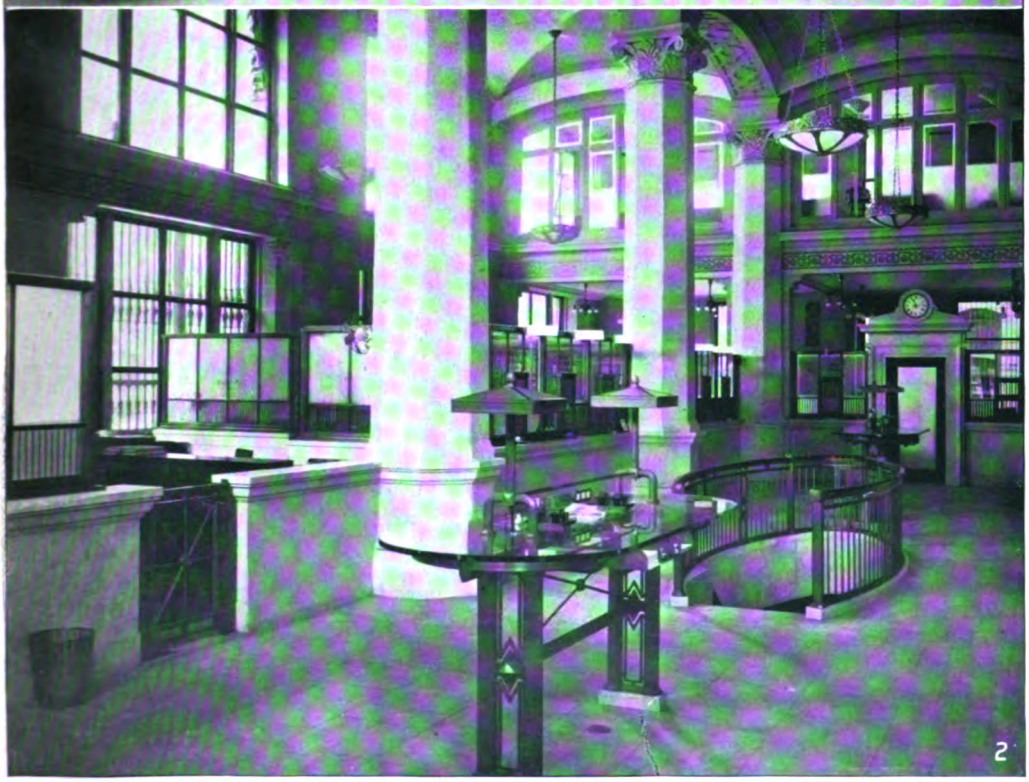
The final result of the liquidation of the bank was briefly stated in a letter from Thomas Robins, Esq., then president of the Philadelphia National Bank who was the last survivor of its numerous assignees:

"All the circulating notes of the Bank of the United States, together with the deposits, were paid in full, principal and interest, and the accounts of the assignees were finally settled in 1856. There were no funds, and no dividend was paid to the stockholders of the bank; the whole twenty-eight millions of dollars were a total loss to them."

Nicholas Biddle was president of the bank from January 1823 to March 1839, being president of the Bank of the United States until its charter expired in 1836, and for the next three years president of the United States Bank of Pennsylvania. At the time of his resignation the shares were selling at 111, having in 1837 sold at 137; but, in 1843, after the failure, its shares were quoted at 1⅞ per cent.

Both the first and second Banks of the United States were killed by the prejudice against banks, which exists to an even greater

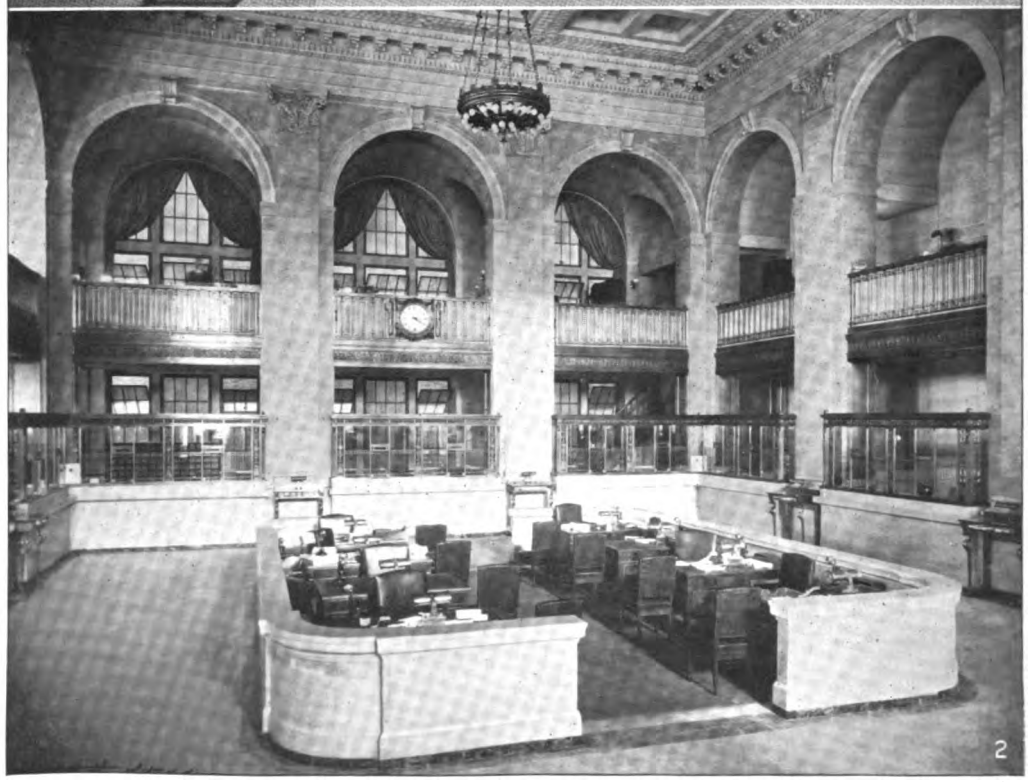
# BANKS



Courtesy The Gorham Co.

1 Bank of Toronto, Toronto, Canada. (Carrere & Hastings, Archts.)
2 First National Bank, Richmond, Va. (Clinton, Russell and A. C. Bossom, Archts.)

# BANKS



Courtesy The Gorham Co.

1 National City Bank, New York
2 Bankers Trust Co., New York. (Montague Flagg, Archt.)

extent to-day. The fall of the latter institution was hastened by bad management.

### THE SPECIE CIRCULAR.

The order for the removal of the public deposits from the Bank of the United States was dated 26 Sept. 1833. After this date the money collected from customs and other sources of revenue was no longer paid into the Federal bank, but was deposited with selected State banks, called «pet banks» by the opponents of the Administration. The payment of the public debt and the great increase in the sales of public lands caused the surplus of revenue over expenditures to increase in an unprecedented manner. The Bank of the United States in its most prosperous days had never had in its vaults much over $8,000,000 of the public moneys at any one time; but by 1 Nov. 1836, 88 State banks in 24 States with a capital of $77,576,449, held public deposits amounting to $49,377,986. Their ordinary individual deposits at the same time were only a little over $25,000,000. That there was any very clear apprehension of the extent to which this accumulation of wealth would take place may be doubted, but it is certain that as early as 1829 there were calculations made upon an anticipated surplus of revenue as an aid to party advancement, either by means of the bank or in spite of it. The financial stringency of 1834 indicated that the removal of the public funds to the State banks had seriously disturbed the usual course of loans, and the consequent suffering started a demand for the distribution of the accumulating surplus among the several States. The State banks had thrown their influence against the Federal bank in aid of the Administration, and they were allowed to reap their reward by the use of the public moneys entrusted to them as a basis of extending their loans and for enormous issues of their own notes. Banks were started for the sole purpose of issuing notes that might be turned in at the land offices for public land. Good land office money was the test of the credit of a bank bill. Speculators thus obtained vast tracts of valuable land. The notes appeared to go through the hands of innocent third parties. When the bank failed, as it usually did, the Treasury bore the loss. Even in less flagrant cases the bank credit enabled immense territory to be held for speculation, keeping out actual settlers. Under this stipulation the receipts from the sales of public lands rose from about $5,000,000 in 1834 to $24,800,000 in 1836. These later receipts were almost altogether in bills of State banks; and thus the consequent difficulty in securing specie, and the losses incurred from bank failures, impelled the President (Jackson) to cause the Secretary of the Treasury to issue, on 11 July 1836, the celebrated specie circular forbidding the receipt of anything but specie in payment of the public lands. He also pocketed a bill passed by Congress to compel the receipt of the notes of specie-paying banks.

### INDEPENDENT TREASURY SYSTEM.

Following experiences with the Bank of the United States and the State banks as custodians of public funds, the Independent Treasury System, by which the government might take charge of its own funds, came into existence by the Act of 4 July 1840, though the law was repealed in the following year, and was not again re-enacted until 6 Aug. 1846. The operations of this law were substantially changed by the National Currency Act of 1863, and the latter in turn by the Federal Reserve Act of 1913.

The method of handling the Treasury receipts has been the subject of much criticism. Instead of depositing the public funds in the banks in the ordinary course of business, to be drawn against as needed, it has long been the practice of the Secretary of the Treasury to make large withdrawals and deposits in bulk. Very often the deposits have been made for the purpose of affording relief to the money market or for assisting in moving the crops and sometimes in the attempt to prevent panic. That the system has worked badly is the belief of those most competent to judge. It has been remedied in part by the Federal Reserve Act (q.v.), but the Secretary of the Treasury is still clothed with large discretionary powers in handling the public funds. Charges have been made at times that the surplus revenues were being employed for the benefit of Wall street speculation, and at others that they were being deposited in banks in certain localities for political effect. Whatever truth there may be in these charges, it is certain that the alternate deposit and withdrawal of large amounts of public funds have exercised an artificial influence on the money market. This would be obviated were the receipts of the government deposited in the banks and withdrawn in the ordinary course in accordance with usual business practice.

Banking power of the United States, 20 June 1917:

(Money columns in millions.)

| | Number of banks | Capital paid in | Surplus and profits | Deposits [1] | National bank circulation and Federal reserve notes | Total, June 1917 |
|---|---|---|---|---|---|---|
| National banks | 7,604 | $1,082.8 | $1,134.9 | $9,746.2 | $660.4 | $12,624.3 |
| Reporting State banks | 20,319 | 1,191.4 | 1,484.8 | 16,782.9 | ..... | 19,459.1 |
| Non-reporting private banks [2] | 2,830 | 50.0 | 30.0 | 450.0 | ..... | 530.0 |
| Total | 30,753 | $2,324.2 | $2,649.7 | $26,979.1 | $660.4 | $32,613.4 |
| Federal reserve banks | 12 | 57.2 | ..... | 1,302.0 | 500.5 | 1,859.7 |
| Grand total | 30,765 | $2,381.4 | $2,649.7 | $28,281.1 | $1,160.9 | $34,473.1 |

[1] Includes dividends unpaid, postal savings and United States deposits, but not amounts due to banks, except in case of reserve deposits with Federal reserve banks, which banks are required to maintain in gold and lawful money a reserve of not less than 35 per cent against deposits.

[2] Estimated on basis of capital, etc., of reporting private banks.

**Banking Statistics.**— Statement of the principal items of resources and liabilities of 27,935 reporting banks, including the Federal reserve banks in the United States and island possessions June 1917:

| | 27,923 reporting banks June 20, 1917 | 12 Federal reserve banks June 22, 1917 | Total, 27,935 banks |
|---|---|---|---|
| RESOURCES | | | |
| Loans and discounts | $20,594,228,088 91 | $435,287,000 00 | $21,029,515,088 91 |
| Overdrafts | 47,199,175 92 | ..... | 47,199,175 92 |
| Investments | 8,003,819,982 90 | 117,362,000 00 | 8,121,181,982 90 |
| Banking house, furniture and fixtures | 709,065,343 55 | ..... | 709,065,343 55 |
| Other real estate owned | 153,901,863 77 | ..... | 153,901,863 77 |
| Due from banks | 4,793,167,162 83 | [1] 198,387,000 00 | 4,991,554,162 83 |
| Checks and other cash items | 272,608,629 09 | ..... | 272,608,629 09 |
| Exchanges for clearing house | 486,082,803 20 | ..... | 486,082,803 20 |
| Cash on hand | 1,502,502,076 06 | 1,247,698,000 00 | 2,750,200,076 06 |
| Other resources | 564,188,012 08 | 908,000 00 | 565,096,012 08 |
| Total resources | $37,126,763,138 31 | $1,999,642,000 00 | $39,126,405,138 31 |
| LIABILITIES | | | |
| Capital stock paid in | $2,274,200,153 48 | $57,171,000 00 | $2,331,371,153 48 |
| Surplus | 1,945,543,680 73 | ..... | 1,945,543,680 73 |
| Undivided profits | 674,190,643 25 | ..... | 674,190,643 25 |
| National bank circulation | 660,431,000 00 | ..... | 660,431,000 00 |
| Due to banks | 3,913,944,423 51 | [2] 943,790,000 00 | 4,857,734,423 51 |
| Federal reserve note circulation | ..... | [3] 500,497,000 00 | 500,497,000 00 |
| Dividends unpaid | 4,585,947 01 | ..... | 4,585,947 01 |
| Deposits | 26,289,708,159 14 | ..... | 26,289,708,159 14 |
| United States deposits | 132,965,000 00 | 495,807,000 00 | 628,772,000 00 |
| Postal-savings deposits | 101,873,406 56 | ..... | 101,873,406 56 |
| Notes and bills rediscounted | 167,470,882 78 | ..... | 167,470,882 78 |
| Bills payable | 317,853,113 00 | ..... | 317,853,113 00 |
| Other liabilities | 643,996,728 85 | 2,377,000 00 | 646,373,728 85 |
| Total liabilities | $37,126,763,138 31 | $1,999,642,000 00 | $39,126,405,138 31 |

[1] Uncollected items and due from other Federal reserve banks.
[2] Due to members-reserve account, $806,209,000, and collection items, $137,581,000.
[3] Includes $766,000 Federal reserve bank notes.

Number of savings banks in the United States, number of depositors, amount of savings deposits, average amount due each depositor in the years 1903 to 1917, and average per capita in the United States in the years given —

| YEAR | Banks | Depositors | Deposits | Average due each depositor | Average per capita in the United States |
|---|---|---|---|---|---|
| 1903 | 1,078 | 7,035,228 | $2,935,204,845 | $417 21 | $36 52 |
| 1904 | 1,157 | 7,305,443 | 3,060,178,611 | 418 89 | 37 52 |
| 1905 | 1,237 | 7,696,229 | 3,261,236,119 | 423 74 | 39 17 |
| 1906 | 1,319 | 8,027,192 | 3,482,137,198 | 433 79 | 41 13 |
| 1907 | 1,415 | 8,588,811 | 3,690,078,945 | 429 64 | 42 87 |
| 1908 | 1,453 | 8,705,848 | 3,660,553,945 | 420 47 | 41 84 |
| 1909 | 1,703 | 8,831,863 | 3,713,405,710 | 420 45 | 41 75 |
| 1910 | 1,759 | 9,142,908 | 4,070,486,246 | 445 20 | 45 05 |
| 1911 | 1,884 | 9,794,647 | 4,212,583,598 | 430 09 | 44 82 |
| 1912 | 1,922 | 10,010,304 | 4,451,818,522 | 444 72 | 46 53 |
| 1913 | 1,978 | 10,766,936 | 4,727,403,950 | 439 07 | 48 56 |
| 1914 | 2,100 | 11,109,499 | 4,936,591,849 | 444 35 | 49 85 |
| 1915 | 2,159 | 11,285,755 | 4,997,706,013 | 442 83 | 49 91 |
| 1916 Mutual savings banks | 622 | 8,592,271 | 4,186,976,600 | 487 30 | ..... |
| 1916 Stock savings banks [1] | 1,242 | 2,556,121 | [2] 901,610,694 | 352 72 | ..... |
| 1917 Mutual savings banks | 622 | 8,935,055 | 4,422,489,384 | 494 96 | ..... |
| 1917 Stock savings banks [1] | [3] 1,185 | 2,431,958 | 905,532,890 | 409 35 | ..... |

[1] The relatively small amount of deposits reported for stock savings banks is due to the fact that the returns from many States include this class of banks with commercial banks.
[2] Includes time deposits, $9,889,107, and commercial deposits amounting to $47,374,709.
[3] 69 banks, with deposits aggregating $41,896,000 and depositors numbering 334,970, included with figures for stock savings banks in 1916, are included with statistics for State banks for the current year for the reason that State banking departments did not compile the returns separately.

NOTE.— In the assembling of data in relation to savings banks the classification of banks as made by the State banking departments is closely followed, in consequence of which a number of so-called State savings banks, formerly treated by the comptroller of the currency office as savings banks, are now regarded as commercial banks, and the returns therefrom are combined with the latter.

In the foregoing table the figures for 1903 to 1908, inclusive, but not subsequently, include the number of depositors and the amount of deposits in the State banks of Illinois having savings departments, but not the number of such banks, by reason of the fact that general returns from these institutions are incorporated in State banks' returns.

The 12 Federal reserve banks opened for business on 16 Nov. 1914. Statements of their assets and liabilities are issued weekly. The consolidated statements of the banks for the stated date in November 1914, 1915, 1916 and 1917 are as follows:

| | 27 Nov. 1914 | 26 Nov. 1915 | 24 Nov. 1916 | 16 Nov. 1917 |
|---|---|---|---|---|
| ASSETS | | | | |
| Gold | $227,840,000 | $321,068,000 | $459,935,000 | $1,584,328,000 |
| Other lawful money | 34,630,000 | 37,212,000 | 17,974,000 | 52,525,000 |
| Bills discounted and bought | 7,383,000 | 48,973,000 | 122,593,000 | 681,719,000 |
| United States bonds | ..... | 12,919,000 | 39,427,000 | [1] 241,906,000 |
| One-year treasury notes | ..... | ..... | 11,167,000 | ..... |
| Municipal warrants | ..... | 27,308,000 | 22,166,000 | 1,273,000 |
| Federal reserve notes — net | ..... | 19,176,000 | 15,414,000 | ..... |
| Due from Federal reserve banks — net | ..... | 14,053,000 | 43,263,000 | ..... |
| All other assets | 165,000 | 4,633,000 | 2,121,000 | 22,111,000 |
| Uncollected items | ..... | ..... | ..... | 428,544,000 |
| Total | $270,018,000 | $485,342,000 | $735,060,000 | $3,012,406,000 |
| LIABILITIES | | | | |
| Capital paid in | $18,050,000 | $54,846,000 | $55,711,000 | $66,691,000 |
| Government deposits | ..... | 15,000,000 | 26,319,000 | 218,887,000 |
| Member bank deposits — net | 249,268,000 | 397,952,000 | 637,072,000 | ..... |
| Due to member and non-member banks | ..... | ..... | ..... | 1,501,423,000 |
| Federal reserve notes — net | 2,700,000 | 13,385,000 | 14,296,000 | [2] 972,585,000 |
| Federal reserve bank notes in circulation | ..... | ..... | 1,028,000 | 8,000,000 |
| All other liabilities | ..... | 4,159,000 | 634,000 | 4,383,000 |
| Collection items | ..... | ..... | ..... | 240,437,000 |
| Total | $270,018,000 | $485,342,000 | $735,060,000 | $3,012,406,000 |

[1] United States government long and short term securities. [2] In actual circulation.

COMPARATIVE STATEMENT OF RESOURCES AND LIABILITIES OF ALL BANKS 1914–1917.

The following statement shows the principal items of resources and liabilities of national and other banks (Federal reserve banks not included) for the years 1914 to 1917:

| CLASSIFICATION | 1914 (26,765 banks) | 1915 (27,062 banks) | 1916 (27,513 banks) | 1917 (27,923 banks) |
|---|---|---|---|---|
| RESOURCES | | | | |
| Loans and discounts | $15,288,357,283 98 | $15,722,440,177 20 | $17,811,605,164 40 | [3] $20,594,228,088 91 |
| Overdrafts | 51,120,621 58 | 36,232,421 03 | 38,210,536 02 | 47,199,175 92 |
| Bonds stocks and other securities | 5,584,924,886 48 | 5,881,931,375 37 | 6,796,569,640 68 | 8,003,819,982 90 |
| Due from other banks and bankers | 2,872,697,225 26 | 3,233,942,829 39 | 4,032,125,378 52 | 4,793,167,162 83 |
| Real estate, furniture, etc.[1] | 739,679,598 08 | 793,404,941 00 | 826,641,786 73 | 862,967,207 32 |
| Checks and other cash items [2] | 520,995,362 02 | 376,875,161 00 | 770,424,724 08 | 758,691,432 29 |
| Cash on hand | 1,639,219,162 79 | 1,457,702,138 31 | 1,486,118,321 95 | 1,502,502,076 06 |
| Other resources | 274,403,890 77 | 301,600,634 26 | 509,542,144 55 | 564,188,012 08 |
| Total | $26,971,398,030 96 | $27,804,129,677 56 | $32,271,237,696 93 | $37,126,763,138 31 |
| LIABILITIES | | | | |
| Capital stock paid in | $2,132,074,073 20 | $2,162,841,369 93 | $2,195,101,115 96 | $2,274,200,153 48 |
| Surplus fund | 1,714,486,142 85 | 1,732,918,047 19 | 1,849,693,074 48 | 1,945,543,680 73 |
| Other undivided profits | 562,031,228 82 | 639,777,329 68 | 564,337,993 50 | 674,190,643 25 |
| Circulation (national banks) | 722,554,719 00 | 722,703,856 50 | 676,116,000 00 | 660,431,000 00 |
| Dividends unpaid | 30,133,899 35 | 4,241,968 34 | 28,690,888 81 | 4,585,947 01 |
| Individual deposits | 18,517,732,879 01 | 19,135,380,200 45 | 22,773,714,074 98 | 26,289,708,159 14 |
| Postal-savings deposits | 40,245,588 30 | 59,771,103 54 | 71,087,526 37 | 101,873,406 56 |
| United States deposits | 66,654,582 55 | 48,964,257 51 | 39,457,000 00 | 132,965,000 00 |
| Due to other banks and bankers | 2,705,075,367 14 | 2,783,312,258 52 | 3,463,608,916 33 | 3,913,944,423 51 |
| Other liabilities | 480,409,550 74 | 514,219,285 90 | 609,431,106 50 | 1,129,320,724 63 |
| Total | $26,971,398,030 96 | $27,804,129,677 56 | $32,271,237,696 93 | $37,126,763,138 31 |

[1] Includes other real estate owned. [2] Includes exchanges for clearing house. [3] Includes rediscounts.

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**9. THE NATIONAL BANKING SYSTEM.** At the outbreak of the Civil War the statesmen of that epoch were confronted with financial problems of first magnitude. Should they meet them by the usual expedient of resorting to large issues of paper money or adopt some safer method? In his annual report for 1861 Secretary Chase declared against the issue of legal-tender paper and proposed a banking system whose principal features would be a circulation of notes bearing a common impression and authenticated by a common authority; second, the redemption of these notes by the associations and institutions to which they may be delivered for issue; and, third, the security of that redemption by the pledge of United States stocks and an adequate provision of specie. The Secretary declared that the proposed notes would, in his judgment, "form the safest currency which this country has ever enjoyed; while their receivability for all government debts, except customs, would make them, wherever payable, of equal value as a currency in every part of the Union."

The statesmen of the Civil War epoch in formulating the financial policy that was to assist the nation through this perilous period gave full weight to the inborn American predilection against concentrated banking power, and instead of establishing a powerful bank of issue, which might have been of inestimable service in steering the lumbering ship of state through the stormy waters, and whose cur-

rency based upon commercial transactions and gold might have stayed the ruinous rise in prices and vastly reduced the war outlay, deliberately committed the country to a system of small scattered banks and to the shifting sands of government paper currency. The policy then decided upon has continued to dominate the banking situation for the past 50 years. All attempts to substitute a bank currency for government paper have proved futile.

No subject connected with the Civil War finances has been more fiercely debated than the departure from what many regarded as sound financial policy in refusing to depend upon the banks and in resorting to the issue of legal-tender Treasury notes. Yet the latter policy was not the one originally contemplated by Secretary Chase and others who had the shaping of the finances of the war. Mr. Chase in his report of 1861 had recommended a system of national banks with note issues based upon the public stocks, and Mr. Spaulding had been asked to draw a bill to carry out this recommendation. He fulfilled this duty, but before the measure was introduced in the House it became evident that it could not be enacted in time to be of service to the government in the dire straits in which it was then placed. A section of Mr. Spaulding's bank bill providing for the incidental issue of Treasury notes was substituted for the banking bill and, in a form slightly altered from the original draft, became a law.

In his introduction to the 'Financial History of the War,' p. 1, Mr. Spaulding says:

"The first material mistake in the management of the finances occurred when Secretary Chase discarded the use of the bank check and the clearing-house in the fall of 1861. This mistake occurred under the following circumstances:

"Two important loan acts were passed at the extra sessions of Congress in July and August 1861. The first act was approved 17 July and the second 5 August. By section six of the last-mentioned act, the Sub-Treasury Act, passed in 1846, was so far suspended as to allow the Secretary of the Treasury 'To deposit any of the moneys obtained on any of the loans now authorized by law, to the credit of the Treasurer of the United States, in such solvent specie-paying banks as he may select; and the said moneys, so deposited, may be withdrawn from such deposit, for deposit with the regular authorized depositories, or for the payment of public dues, or paid in the redemption of the notes authorized to be issued under this act, or the act to which this is supplementary, payable on demand, as may seem expedient to or be directed by the Secretary of the Treasury.'

"The primary object, which Mr. Appleton and myself had in view, in preparing this section, was to relax the rigid requirements of the Sub-Treasury Act in regard to the receipt and disbursement of coin and instead of paying solely from coin deposits in the Treasury, to allow all the money obtained on these loans to be deposited in solvent banks; the United States Treasurer to draw his checks directly on such deposit banks in payment of war expenses, which checks would be paid in State bank notes then redeemable on demand in gold, or in the ordinary course of business, to a large extent, they would pass through the New York Clearing-House and the clearing-houses of other cities and be settled and cancelled by offset without drawing large amounts of specie. This mode of payment would have enabled the Secretary more easily to effect such loans and make his large disbursements without materially disturbing the coin reserves held by the banks, which were then well protected by these reserves in their vaults.

"This mode of making the disbursements for the large war expenses was regarded by me at that early period of the war as of vital consequence to the stability of the finances of both government and people; hence the preparation and adoption of the sixth section of the Act of 5 Aug. 1861, giving the Secretary of the Treasury discretionary power to suspend the Sub-Treasury Law in respect to these loans.

"After the battle of Bull Run, which occurred on the twenty-first day of July of that year, the necessities of the government in clothing, arming and feeding troops — in providing munitions of war and building a navy — became so urgent that the banks in New York, Boston and Philadelphia most patriotically came forward and made arrangements in several negotiations with Secretary Chase to loan the government $150,000,000 under the provisions of the two loan acts passed at the extra session. Of this sum $105,000,000 was apportioned to the associated banks in the City of New York, payable by instalments. The banks were then in good condition, transacting their business on a specie basis, and paid coin for all balances at the clearing-house, and redeemed their circulating notes in coin, and the loan to the government was made with the expectation that the money would be deposited in the banks, and be checked out under the direction of the Secretary, in pursuance of the sixth section above referred to. The Secretary of the Treasury refused to use the discretionary power conferred upon him by that section, and would not check on the banks for the expenses of the war, so that current bank notes could be paid or balances settled through the clearing-house, but insisted that the banks should pay the money loaned into the Sub-Treasury in gold or gold Treasury notes, and from thence it was distributed for war purposes and scattered in different parts of the country. By far the greater part of this loan was paid in gold coin, taken from the reserves of the banks, commencing on the nineteenth of August 1861. This unnecessary mode of requiring the payment of the loans so weakened the banks that it brought on a general suspension of specie payments during the last days of December 1861. Notwithstanding the banks commenced making advances to the government about 19 Aug. 1861, yet none of the securities to be issued by the government for the loans was turned over to them until 14 Jan. 1862.

"The banks having been committed to making the loans, and having made partial advances on account of the same, were obliged to complete the loan notwithstanding the Secretary of the Treasury deemed it incompatible with his views of duty, and the traditions of the Sub-Treasury Law, to use such banks as disbursing agents of the government even under the extraordinary exigency under which the loans were made. The call upon the banks for

payment into the government depository of the remaining instalments of the loan, either in coin or gold Treasury notes, was persistently urged by the Secretary until the final closing of the transaction on the third of February, 1862.

"This was the first material mistake of the Secretary of the Treasury, and was the first step in the wrong direction, which combined with other important events, led to the necessity of passing the Legal-Tender Act.

"The Secretary, in breaking the banks, at the same time broke the Sub-Treasury, and both were discredited together."

Mr. Sherman in his 'Recollections,' p. 269, says:

"The Secretary of the Treasury had ample and complete authority given him by the act of July 1861, to borrow money on the credit of the government, but he could not deal with the system of State banks then existing in the several States. He was forbidden by the Sub-Treasury Act of 1846 to receive notes of State banks, and was required to receive into and pay from the Treasury only the coin of the United States; but by the Act of 5 Aug. 1861, he was permitted to deposit to the credit of the Treasurer of the United States, in such solvent specie-paying banks as he might select, any of the moneys obtained from loans, the money thus deposited to be withdrawn only for transfer to the regularly authorized depositories, or for the payment of public dues, including certain notes payable on demand, as he might deem expedient. He had, however, no authority to receive from individuals or banks any money but coin.

"The only coin received from the Boston, New York and Philadelphia banks, in payment of their subscription to the government loans, to the amount of nearly $150,000,000, had to be sent to every point in the United States to meet public obligations, and when thus scattered was not readily returnable to the banks, thus exhausting their resources and their ability to loan again."

Mr. Sherman is very positive regarding the necessity of the legal tenders as a war measure. In his 'Recollections' (p. 281), he makes this statement:

"The Legal-Tender Act, with its provision for coin receipts to pay interest on bonds, whatever may be said to the contrary by theorists, was the only measure that could have enabled the government to carry on successfully the vast operations of the war."

Hugh McCulloch, the first Comptroller of the Currency and twice Secretary of the Treasury, in his 'Men and Measures of Half a Century' (p. 135), has this to say of the failure of Secretary Chase to make use of bank checks in disbursing government funds:

"For a considerable time, even after the war had begun, the specie standard was maintained, and hopes were indulged that the war might be prosecuted on a specie basis. These hopes were dissipated by the action of Secretary Chase in his dealings with the New York, Philadelphia and Boston banks, which had agreed to advance to the government on its 7.3 notes $150,000,000 ($50,000,000 in August, $50,000,000 in October and $50,000,000 in November, 1861) under the expectation that the Treasury drafts for the money would be presented through the clearing-houses and be paid without large reductions of their coin. The Secretary did not, however, feel at liberty to meet their expectations, and the drain upon their coin reserve soon became so heavy that they were forced to suspend specie payments. Their suspension was soon followed by the suspension of nearly all the banks in the country."

When Chase, as Spaulding said, broke the banks and the sub-Treasury at the same time and discredited both, an urgent necessity arose for strengthening the weakened credit of the country. It soon became apparent that the issue of legal-tender notes alone would not suffice, as the frightful depreciation of these forced instruments of credit foreshadowed a time when they would approximate the same degree of worthlessness reached by the Continental currency in the struggle for independence, and made it incumbent upon Mr. Lincoln's financial advisers to devise some efficient means for holding this depreciation in check by a resort to the borrowing powers of the government. The precarious situation in which the country was involved injuriously affected its credit abroad, and made it desirable, if bonds were to be sold in large volume without ruinous depreciation, to create a home demand for them. The device of using the public debt as a basis for currency issued through banks was an old one. It had been proposed by Hamilton who when asked by Washington, "What is to be done with our terrible debt?" answered, "Bank on it as our only available capital, and the best in the world." Many of the States had tried the experiment of chartering banks to issue currency against a pledge of State stocks, often with disastrous results. There were other States — of which New York was a conspicuous example — where the banking laws were good and the banking system sound. It is well known that the law of the State named was relied on largely in framing the act creating the national banking system.

More than two years before the bill providing for the organization of national banks became a law, the banks of the country had suspended specie payment, not to be restored again until 1879. The effect of this suspension was to link the national bank notes to the legal tenders, in which they were redeemable rather than to gold. Of course, the bank notes were no better and no worse than the money in which they were payable. They were not as good as gold, but neither were the legal-tender notes, the latter and the bank bills substantially keeping together as compared with gold.

In reality, though nominally issued by banks and bearing on their face the name of the bank emitting them, the national bank notes are government paper money. They are secured by bonds of the United States, deposited with the Treasurer at Washington, in which city they are redeemed in lawful money, and though the law provides for redemption of the notes at the counters of the issuing banks this is almost totally unknown in practice. They are not redeemed through the clearings as are the notes of the Canadian banks. The government guarantees the payment of the notes, running no risk whatever in so doing, since it always has in hand an amount of its own securities equal to the face of the notes issued.

Devised as the national banking system

to give the country sound and uniform currency and to aid in replenishing the Treasury, it hardly succeeded in either of these aims. The national bank currency has been of uniform value and a vast improvement on a great deal of the State bank circulation which it displaced, but it has through its inelasticity developed serious defects. In so far as the new banking system was relied on to furnish currency during the Civil War, the result was not very satisfactory. When the war closed the national bank notes were in the neighborhood of $100,000,000 in amount—only a small fraction of the loans placed to carry on the war. Had the channels of circulation not been so well supplied by legal-tender notes, the national bank notes at the close of the war would have been much greater in volume. After the war, when the government was still for a long time heavily in debt, the national banks were of immense help in sustaining the public credit.

But it is as a system of discount and deposit banks that the national associations have won their greatest success and established themselves firmly in the public confidence. It was, of course, one of the aims of Secretary Chase to supplement the somewhat inharmonious State banking systems then existing with something having at least uniform laws to govern them and all watched over from Washington, yet he could hardly have foreseen how surprisingly large proportions the national banks were to attain through discount and deposit operations in the first half-century of their existence.

Marvelous as has been the record of national banking growth, it might easily have been much greater had Congress earlier enlarged the functions of the banks, thus forestalling the rapid rise of the trust company and the tremendous accretions of deposits in savings banks.

The history of the national banking system contains few important dates — points that mark any striking growth. There are two exceptions to this statement, however. After the original act was passed in 1863, the growth of the banks was slow until the 10 per cent tax was imposed on State bank notes in 1865. But the real impetus to national banking was given in 1900, when the minimum capital was reduced from $50,000 to $25,000, and the issue of circulation placed upon a somewhat more liberal basis.

Another landmark in the history of the system was the passage of the Federal Reserve Act (q.v.), 23 Dec. 1913. This act changed completely the method of redepositing reserves, provided for rediscounting and accepting and for a system of note issues based on coin and commercial paper. It also made other important changes in the Banking Law. Perhaps the strongest feature of the new law was in linking all the national banks together for their common defense; that is, a centralization of the reserves whereby they become, in a sense, the common property of all the banks so far as relates to their use.

Elements of safety in the national banking system have been the requirement in regard to the actual paying in of capital, the supervision exercised by the government and the admirable features of the law with regard to loans, and the double liability of shareholders. Compared to the colossal sums handled by these banks, their losses have been trifling, and they are growing proportionally smaller year by year.

The national banks have furnished a remarkably safe and efficient system of banking, and have been factors of immense benefit in local development and in the augmentation of the national wealth and prosperity. If they have fallen short, it has been due to the slowness of the national legislature in adapting the law to meet changing conditions.

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**10. STATE BANKING SYSTEM.** Banking, in the early history of the United States, was the prerogative of the privileged few. Charters were obtained by subterfuges of one kind or another, by favoritism or by bribery. Familiar examples of the devices employed to get banking authority under some other guise are the Chemical Bank of New York, chartered as a chemical company; the Manhattan Company Bank, also of New York, chartered as a water company; and the Wisconsin Marine and Fire Insurance Company Bank, whose original business is indicated by the title, the word "bank" being an afterthought.

But with the enactment of the Free Banking Law of New York in 1838, banking by special charter gradually disappeared, for the provision of the New York law conferring banking powers on all associations of persons complying with the terms of the act was generally copied in the banking legislation of other States, as it was later in the National Banking Act. From being a monopoly enjoyed by only a favored few, banking became so free as to encourage the rapid multiplication of banks until their number has grown to larger proportions than in any other country. The absolute freedom which was long given to any body of persons complying with the laws in organizing banks has been somewhat restricted in recent years, and the Comptroller of the Currency, in the case of national banks, and the supervising officers of State banks, are generally showing a disposition to discourage the organization of banks where they will tend to cause undue competition, and to refuse altogether applications for authority to organize banks by the professional bank promoter.

While in the early banking history of the country some of the States devised sound banking systems, a great many did not. There was, in many localities, a lack of banking capital or of capital of any kind. Attempts were made to remedy this lack of capital by starting banks for issuing notes, a favorite device being to decide on an extensive policy of public improvements, to issue bonds for this purpose, the bonds being purchased by the banks and notes emitted against them. These efforts nearly all proved disastrous, but the States adhering to sound principles of banking and to correct methods of emitting notes had different experiences. (See BANK NOTE ISSUES, article 19). Indeed, when the national banking system came to be established it was based, in important respects, on the banking laws of New York, Massachusetts and other States whose legislation had been wisely planned. In turn, the National Banking Act itself became

the model for banking legislation in many of the States, until to-day, with rare exceptions, the standards of banking as formulated by the banking acts of the various States are substantially identical with those of the national banking system. The State banks, in fact, found it advantageous to maintain a position of safety at least approximating that of the national banks, otherwise their growth would have been checked. They could, on the other hand, transact some kinds of business denied their Federal competitors, and this, perhaps, made them better adapted to the needs of rural communities. This difference in the functions of the two classes of banks was greatly modified by the Federal Reserve system (q.v.), inaugurated in 1913. The State banks outnumber the national banks more than two to one — a fact due partly to the larger capital required of the latter (before 1900 it was fixed at a minimum of $50,000 and is now $25,000) and to other causes.

Massachusetts has no State banks of discount and deposit; New York has such institutions; California and Texas and some other States, in their banking laws, authorize corporations to transact discount and deposit banking, savings bank business and trust company business all under one charter. Substantially this principle (department-store banking it is sometimes called) has been embodied in the Federal Reserve Act. Prior to the enactment of the law referred to, relations between National and State banks were generally amicable, their lines of business diverging considerably. With the removal of these differences, at least to an extent, it becomes a question as to whether the State banks may not find it less easy than heretofore to compete with the National institutions.

The distinguishing feature of the banking system of the United States, contrasted with that of nearly all other countries in the world, is that we have a very large number (between 20,000 and 30,000) of small independent banks, locally owned and managed. In the European countries, and in Australia and Canada, there are a few large banks with head offices and numerous branches. In the United States the permission to establish branches of either National or State banks is limited in scope, but it has shown a tendency to extension of late years

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**11. PRIVATE BANKS.** For the ordinary functions of deposit and discount the private banker in the United States is being rapidly superseded by institutions organized under State and Federal laws. The private banker might engage in business with little or no capital, and what he had he was at liberty to invest as he chose, and this freedom in the manner of investing his capital extended to the investment of deposits entrusted to his keeping; these he might employ either in his own business or embark them in any enterprise which appealed to his fancy. The incorporated bank, on the other hand, enjoys no such license. It must have a prescribed capital, which must be paid up in money, and this capital must be maintained unimpaired; and, in addition, the banking laws generally require that a definite surplus fund — so much in proportion to capital — shall be accumulated and maintained. These banks, unlike the private banks, must submit to frequent official visitation and examination and must make and publish detailed reports of condition one or more times a year. Some of the States have found it expedient to prohibit private banking altogether.

As against the objections to private banking as above set forth it may be stated that where the State and national bank stockholders are only liable, in case of insolvency of the bank, for an additional amount equal to their shares, the private banker is liable for the debts of his bank without limitation. (The adoption of the principle of limited liability in England grew out of some disastrous bank failures where the stockholders were heavily assessed, losing in some instances their entire fortunes). Furthermore, the restrictions on the investments and operations of incorporated banks, while tending to greater safety, yet restrain the banks from opportunities of making profits which may be taken advantage of by the shrewd private banker.

Now, as in the earliest days of banking in Europe, some of the greatest transactions of domestic and foreign finance are carried on by private bankers; but they are not, in the ordinary sense, doing a discount and deposit banking business. They are rather the skilled intermediates of governments and of great corporations, representing their interests among the banks and the investing public, and as such perform a highly useful service. In integrity they compare most favorably with the largest of the incorporated banks, while their operations are not infrequently greater than even the largest of such institutions taken singly. The private banker, in arranging loans for governments and corporations, does not use his own funds, but by his standing and skill is able to mass together the resources of various banks, often in numerous and widely separated localities. He has to do with foreign exchange, the handling of specie on international account and provides the capital for the immense industrial and transportation enterprises which constitute such an important part of the country's business life.

The private banker of to-day is a financial expert without whose service the operations of trade and finance could hardly be carried on, but in performing this service he uses his reputation and skill rather than his own funds or even the funds of others accumulated in his own particular office. He selects, analyzes and classifies the various lines of sound investments and brings to their support, not his own funds alone nor yet those of individuals committed to his care, but the funds of many groups of investors and of banks that have confidence in his integrity and judgment.

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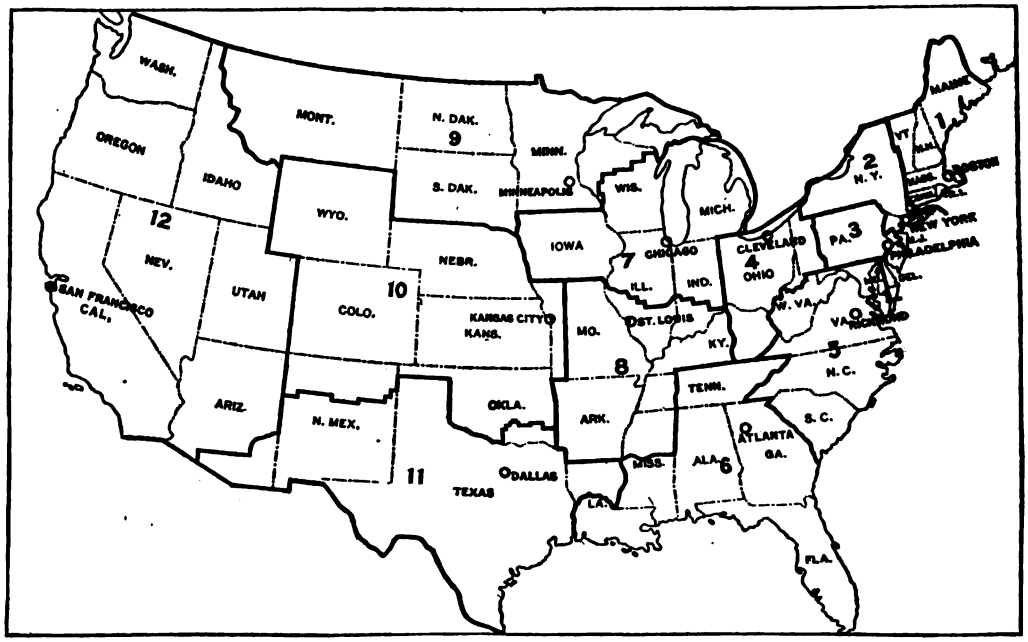
**12. FEDERAL RESERVE SYSTEM, The.** The Federal Reserve Act, passed 23 Dec. 1913, is the underlying measure upon which the Federal Reserve system depends. The system itself consists of (a) the 12 Federal Reserve banks and their branches, situated in districts defined as in the accompanying map;

(b) the national banks which, by the terms of the law, are required to be stockholders in the Federal Reserve banks; and (c) such State-chartered banking institutions as may comply with the requirements for membership and may apply for and be granted such membership.

The banking system of the United States at the time of the adoption of the Federal Reserve Act included three distinct elements (a) the national banks created under charters granted by the Federal government and numbering some 7,600; (b) the State banks, existing under special or general charters granted by the States and rather more numerous than the national banks; and (c) the trust companies and savings banks also created by the States but doing a broader business than the State banks so-called. Only loose restrictions as to capitalization controlled any of these banks, while their reserves might be kept at home in their own vaults, or partly there and




partly with other banks. Under the National Bank Act, three classes of banks had been created — country, reserve city, and central reserve city; their reserves varying from 15 to 25 per cent. Only central reserve city banks were required to keep all of their reserves in their own vaults. Particular complaint had long been made of the bank currency furnished by National institutions. The banks bought government bonds, deposited them in trust with the Treasurer of the United States, and received from the Comptroller of the Currency notes for circulation. These notes were "inelastic" — i.e., could not be expanded or contracted at will in response to business requirements, because they depended upon the volume and price of bonds as determining factors governing their own amount. Due to lack of elastic currency and to wide diffusion of reserves the banking system was liable to disorder in times of financial pressure. In times of quiet it was unable to exert any control over the development of credit or to regulate the country's gold supply, in relation to that of other nations.

Although there had been much discussion of the banking question, no definite legislation designed to improve conditions had been adopted since the Civil War, except only the so-called Aldrich-Vreeland Act of 1908. The "Gold Standard Act of 1900" had dealt almost entirely with the monetary, and only incidentally with the banking, problem. In the Aldrich-Vreeland Act, provision was made for informal unions or associations of banks to be known as "national currency associations" whose function it was to issue notes secured by specified collateral on request of their members. Practically no such associations had, however, been organized under the law until after the adoption of the Federal Reserve Act, so that when the latter measure became law the nation was still on the old basis of banking.

The Federal Reserve Act, however, sought not only to provide the improved and responsive currency which had been called for in the older measures of banking reform, but went much deeper. It recognized that the essential difficulty in American banking lay in its undue decentralization and consequent dissipation of strength. Fundamentally, therefore, it sought to give relief by changing the organization of banking so as to provide for combination of reserves and for joint control of and oversight over banking. To this end it provided for district organizations, which were essentially to be bankers' banks, dealing chiefly with their own members — the commercial banks of the district.

The number of such districts to be created was the subject of much difference of opinion, but ultimately Congress set the number at not

less than eight nor more than 12, while it placed in the hands of an organization committee, consisting of the Secretary of the Treasury, the Secretary of Agriculture and the Comptroller of the Currency the duty of determining how many should first be established and of drawing their outlines. This organization committee was, under the act, to establish in each district a Federal Reserve bank to whose capital national banks must become subscribers in an amount in each case not less than 6 per cent of their own capital (3 per cent to be paid in and 3 per cent to be subject to call). Every such Federal Reserve bank was to have a minimum capitalization of $4,000,000 of which one-half was to be paid up.

The central feature of the act was found in the plan it presented for changing the reserve organization of the country. The old reserve requirements were to be abolished, reserves being transferred, during a period of three years, to the new institutions. Eventually they were to be held only in the member banks' own vaults or in the reserve banks. By the Act of 21 June 1917 all reserves were transferred to the reserve banks and cash on hand with members was left to the latter's discretion. It was provided that reserve credits with reserve banks could be obtained not merely by depositing money, but by discounting paper of specified kinds with the new institutions. The act made full provision for foreign exchange business, clearance of checks, regulation of commercial paper and other essentials.

It was provided that the governing body of the new system be entitled the Federal Reserve Board and consist of five members (two of them bankers) to be named by the President and confirmed by the Senate, together with the Comptroller of the Currency and the Secretary of the Treasury ex officio. This body was duly appointed and took office on 10 Aug. 1914. The Secretary of the Treasury had been authorized by the act to name the date for the opening of the banks and after preliminaries of organization had been completed by the Board the Secretary accordingly opened the banks on 16 Nov. 1914. Prior to this date the capital of the banks had been duly paid in, largely in gold, and the transfer of a first instalment of reserves quickly followed. The act had offered to State banks and trust companies the option of membership, but only a few availed themselves of the opportunity until after the entry of the United States into the European War. The movement then became much more rapid and by the end of 1917 between $4,000,000,000 and $5,000,000,000 of banking assets belonging to State institutions had been brought into the system.

In each Federal Reserve bank the control and operation of the institution is entrusted to a board of directors consisting of nine members. Of these nine, three ("Class A") are representative of the member banks and three ("Class B") are business men (non-bankers), although chosen by the member banks. In voting for these directors the banks are divided according to capitalization into three groups, so that each group is represented on the Board by one Class A and one Class B director. The remaining directors, three in number ("Class C"), are chosen by the Federal Reserve Board. Each director is chosen for three years and their terms are so arranged as to have three such terms expire at the close of each year.

Of the three government directors one, under the law, is designated by the Federal Reserve Board as "Federal Reserve Agent" and as chairman of his local board of directors. As chairman, he presides over meetings and as Federal Reserve Agent he discharges all local duties assigned him by the Board in the operation of the bank. The actual management and conduct of the institution is left to the Board of Directors which names such executive officers as it sees fit. Of these the chief, corresponding to the president of a commercial bank, is called "governor." Under his direction there is developed at each bank the usual staff, including administrative, accounting and credit officers. The Federal Reserve Agent has a separate department under his own jurisdiction, including one or more assistants and a clerical force. He takes charge of the function of note issue and is entrusted with the custody of commercial paper and gold held to protect notes.

Regulations issued from time to time by the Federal Reserve Board, and binding upon all reserve banks, constitute the operating basis of the system and ensure harmony of practice. Under the terms of the act each local board proposes rates of discount which are passed upon by the Federal Reserve Board and go into effect only after being approved by it. Full reports are transmitted daily by each bank and the Board issues a weekly condition report.

Every Federal Reserve bank has its own office arranged much like that of an ordinary bank; and several have purchased or are erecting buildings of their own. Six Federal Reserve banks have established branches equipped like a Federal Reserve bank. Some of these are assigned a sub-district or part of the Federal Reserve district, while others have no definite assignment of territory, but are merely offices for the convenience of member banks. The accompanying tabulation shows the location, capital and chief items of resources of the several banks at a recent date.

The outlines of the 12 districts into which the system is divided are presented in the foregoing map which shows the condition at the close of the year 1917. During 1915–16 several changes in boundaries were made by the Board upon petition of member banks and the lines at first drawn by the Organization Committee were accordingly altered; but none of these changes was of much importance to the general structure of the system.

The earliest work of the Federal Reserve system, like so much of its later operations, was of an unexpected nature. The system had not yet been organized when the breaking out of the European War brought unexpected demands to bear upon the country. There was a heavy drain of gold to Europe and Congress hastily revised the Aldrich-Vreeland Act in an effort to prevent panic. Many currency associations were organized and about $400,000,000 of notes were issued during the autumn. When the reserve banks came into formal existence in November they

STATEMENT OF RESOURCES AND LIABILITIES OF EACH OF THE FEDERAL RESERVE BANKS AT CLOSE OF BUSINESS 30 NOV. 1917

(In thousands of dollars)

| Resources | Boston | N. Y. | Phila. | Cleve. | Rich. | Atl'ta | Chicago | St. Louis | Minn. | Kans. Cy. | Dallas | S. Fran | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gold coin and certificates in vault | 32,506 | 312,190 | 17,815 | 24,735 | 6,163 | 5,820 | 33,197 | 5,407 | 14,064 | 3,136 | 12,617 | 32,237 | 499,887 |
| Gold settlement fund | 825 | 40,660 | 23,091 | 60,833 | 42,495 | 11,238 | 65,198 | 22,975 | 21,043 | 43,658 | 27,974 | 35,246 | 395,236 |
| Gold with foreign agencies | 3,675 | 18,112 | 3,675 | 4,725 | 1,837 | 1,575 | 7,350 | 2,100 | 2,100 | 2,625 | 1,838 | 2,888 | 52,500 |
| Total gold held by banks | 37,006 | 370,962 | 44,581 | 90,293 | 50,495 | 18,633 | 105,745 | 30,482 | 37,207 | 49,419 | 42,429 | 70,371 | 947,623 |
| Gold with Federal Reserve agents | 29,921 | 171,097 | 52,025 | 51,995 | 31,867 | 42,341 | 104,783 | 45,831 | 34,197 | 30,146 | 29,023 | 38,598 | 661,824 |
| Gold redemption fund | 1,000 | 5,000 | 1,500 | 13 | 574 | 618 | 480 | 750 | 719 | 514 | 1,054 | 56 | 12,278 |
| Total gold reserves | 67,927 | 547,059 | 98,106 | 142,301 | 82,936 | 61,592 | 211,008 | 77,063 | 72,123 | 80,079 | 72,506 | 109,025 | 1,621,725 |
| Legal tender notes, silver, etc | 5,623 | 42,931 | 940 | 641 | 165 | 849 | 1,521 | 569 | 303 | 60 | 641 | 243 | 54,486 |
| Total reserves | 73,550 | 589,990 | 99,046 | 142,942 | 83,101 | 62,441 | 212,529 | 77,632 | 72,426 | 80,139 | 73,147 | 109,268 | 1,676,211 |
| Bills discounted — members | 48,072 | 453,721 | 24,003 | 32,612 | 16,735 | 14,351 | 88,029 | 17,838 | 9,114 | 27,103 | 6,279 | 18,600 | 756,457 |
| Bills bought in open market | 23,038 | 56,190 | 23,542 | 27,414 | 13,340 | 4,889 | 6,084 | 8,260 | 7,587 | 4,009 | 14,676 | 16,425 | 205,454 |
| Total bills on hand | 71,110 | 509,911 | 47,545 | 60,026 | 30,075 | 19,240 | 94,113 | 26,098 | 16,701 | 31,112 | 20,955 | 35,025 | 961,911 |
| United States government long-term securities | 609 | 2,287 | 550 | 8,295 | 1,277 | 897 | 14,007 | 2,233 | 1,888 | 8,849 | 3,972 | 2,440 | 47,304 |
| United States government short-term securities | 2,456 | 9,148 | 2,753 | 6,636 | 2,364 | 3,411 | 4,177 | 1,693 | 1,814 | 2,222 | 3,353 | 1,865 | 41,792 |
| Municipal warrants | ..... | 1,016 | 44 | 12 | ..... | 286 | ..... | ..... | 25 | ..... | 46 | ..... | 1,429 |
| Total earning assets | 74,175 | 522,362 | 50,892 | 74,969 | 33,716 | 23,834 | 112,297 | 30,024 | 20,428 | 42,183 | 28,226 | 39,330 | 1,052,436 |
| Due from other Federal Reserve banks — net | ..... | ..... | 2,094 | ..... | ..... | 1,686 | 12,999 | 4,521 | ..... | 8,228 | 1,126 | 1,112 | ..... |
| Uncollected items | 25,981 | 95,834 | 51,043 | 24,622 | 23,586 | 21,984 | 41,521 | 16,979 | 12,728 | 21,779 | 14,769 | 22,334 | 373,160 |
| Total deductions from gross deposits | 25,981 | 95,834 | 53,137 | 24,622 | 23,586 | 23,670 | 54,520 | 21,500 | 12,728 | 30,007 | 15,895 | 23,446 | 373,160 |
| 5 % redemption fund against Federal Reserve bank notes | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 400 | 137 | ..... | 537 |
| All other resources | ..... | ..... | ..... | ..... | 25 | 204 | 113 | 1,009 | 908 | ..... | 175 | 65 | 2,499 |
| Total resources | 173,706 | 1,208,186 | 203,075 | 242,533 | 140,428 | 110,149 | 379,459 | 130,165 | 106,490 | 152,729 | 117,580 | 172,109 | 3,104,843 |
| **Liabilities** | | | | | | | | | | | | | |
| Capital paid-in | 5,744 | 18,059 | 5,613 | 7,866 | 3,613 | 2,723 | 8,646 | 3,441 | 2,589 | 3,379 | 2,791 | 4,036 | 68,500 |
| Government deposits | 11,720 | 25,966 | 10,209 | 22,282 | 14,289 | 4,680 | 39,300 | 12,635 | 11,681 | 11,834 | 13,438 | 42,928 | 220,962 |
| Due to members — reserve account | 67,347 | 746,222 | 72,562 | 98,168 | 46,532 | 34,472 | 160,477 | 46,789 | 40,404 | 68,876 | 45,492 | 62,088 | 1,489,429 |
| Due non-member banks — clearing account | ..... | 9,385 | ..... | 102 | ..... | 71 | 4,697 | 190 | 47 | 2 | ..... | 3,055 | 17,549 |
| Collection items | 19,087 | 62,398 | 36,468 | 16,161 | 15,057 | 10,401 | 23,776 | 13,044 | 4,066 | 13,634 | 8,162 | 9,522 | 231,776 |
| Due to other Federal Reserve banks — net | 7,726 | 1,240 | ..... | 20,609 | 7,364 | ..... | ..... | ..... | 1,918 | ..... | ..... | ..... | (a)7,091 |
| Total gross deposits | 105,880 | 845,211 | 119,239 | 157,322 | 83,242 | 49,624 | 228,250 | 72,658 | 58,116 | 94,346 | 67,092 | 117,593 | 1,966,807 |
| Federal Reserve notes in actual circulation | 61,443 | 342,336 | 77,635 | 76,910 | 53,573 | 57,802 | 142,563 | 54,066 | 45,785 | 46,693 | 47,697 | 50,480 | 1,056,983 |
| Federal Reserve bank notes in circulation, net liability | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 8,000 | ..... | ..... | 8,000 |
| All other liabilities, including foreign government credits | 639 | 2,580 | 588 | 435 | ..... | ..... | ..... | ..... | ..... | 311 | ..... | ..... | 4,553 |
| Total liabilities | 173,706 | 1,208,186 | 203,075 | 242,533 | 140,428 | 110,149 | 379,459 | 130,165 | 106,490 | 152,729 | 117,580 | 172,109 | 3,104,843 |

(a) Difference between net amounts due to and net amounts due from other Federal Reserve banks.

found themselves called upon to assist in the operation of retiring these notes — an important function, but one that brought little actual profit to them.

Moreover, the abnormal movement of gold out of the country which had occurred during the first days of the European War was followed by an equally abnormal movement of gold into this country. Very great sales of our raw materials and manufactured goods abroad were paid for largely in gold and bank reserves were thus much raised. The change in reserve requirements made by the Federal Reserve Act had also set free a large balance of lending power. Due to those two factors, the demand for accommodation at Federal Reserve banks was not great. It was only after the entry of the United States into the European War that they really became active in their rediscount operations. Earnings for the first two years, 1914–15, were only 2.7 per cent above expenses; for 1916 about 5 per cent; but in 1917 they reached about 18 per cent.

The law requires that the Federal Reserve banks, after paying all necessary expenses, together with 6 per cent cumulative dividends to their stockholders, shall carry one-half of excess profits remaining to their surplus fund until the surplus amounts to 40 per cent of the capital, and shall pay the other half of excess profits to the United States government as a franchise tax, the entire excess profits to be paid to the government after the surplus of a Federal Reserve bank reaches 40 per cent of its capital. The Federal Reserve banks of Boston, New York, Chicago, Atlanta, Richmond and Minneapolis have paid their dividends to stockholders to 31 Dec. 1917 and at the same time paid into the treasury of the United States as a franchise tax the sum of $1,134,234.48, the amounts being paid by the banks as follows:

| | | | |
|---|---|---|---|
| Boston | $75,100 00 | Atlanta | $40,000 00 |
| New York | 649,363 57 | Richmond | 116,471 73 |
| Chicago | 215,799 18 | Minneapolis | 37,500 00 |

These banks have also established on their books a surplus fund in amounts equal to the sums paid the government.

It is to be noted, however, that practically since their opening the banks have been subject to very abnormal conditions,— first, in consequence of lack of demand and later because of the existence of unusual and exceptional demand for accommodation based on a very special kind of paper — that secured by government obligations. The banks have not, therefore, had full opportunity to exert their influence upon the commercial paper of the country or to do more than take the preliminary steps toward the creation of an open discount market.

It was with a view to the creation of this discount market that the act gave to the Federal Reserve Board power to regulate the conditions under which commercial paper should be made and discounted at reserve banks. Pursuant to the permission thus given, the Board early defined the chief types of commercial paper, including the bill of exchange accepted and unaccepted, the promissory single-name note and the commodity note — with warehouse receipts as collateral. In all cases the paper was required to be the result of genuine commercial non-speculative transactions and to have a specified short maturity. Acting further in accordance with the terms of the law, the Board authorized the Reserve banks to buy discountable paper in the "open market" — that is, without member bank endorsement, should they desire.

This open market power was availed of by the Reserve banks during their first two years of slack earnings. They bought widely of acceptances and also of government and municipal obligations and at one time had thus invested more than $200,000,000 as a means of carning needed revenue.

The first two years' development in commercial paper was, however, notable for the introduction of the acceptance or accepted bill of exchange into American banking practice. Unusual stimulus to our foreign trade gave to the foreign bill or bankers' acceptance in such trade a degree of recognition it could not otherwise have attained. Although only a moderate amount of this paper was obtained by reserve banks, the fact that it had entered the market as a distinct type of paper for general investment was rendered possible by the new system.

The bankers' acceptance may be drawn either as a foreign or as a domestic bill. No satisfactory data are as yet available concerning the development of the domestic acceptance, and, whatever the volume in existence may be, it is probably small. The foreign bankers' acceptance has had about two years for development, and we may roughly estimate that at the present time the acceptances of all American banks, whether members of the Federal Reserve system or not, are about $250,000,000 — $300,000,000. Every member bank has the right to accept such paper up to 50 per cent of its capital stock, and the Federal Reserve Board has granted to banks the power to accept up to 100 per cent. While the Federal Reserve Act as originally passed gave to the Federal Reserve Board authority to define commercial paper eligible for rediscount at Federal Reserve banks, and the Board in its initial stages desired to discriminate in favor of the two-name paper, it never went so far as to commit itself definitely in that way. Single-name paper has always formed the bulk of that discounted by the Federal Reserve banks, and this has been apparently the result of necessity. The Federal Reserve Act, however, clearly intended to stimulate the "bill of exchange" whether that of the commercial enterprise or of the banker, and the Board has, therefore, very properly endeavored by favoring rates and by special regulations to encourage the development both of the commercial bill of exchange (designated by it as the "trade acceptance") and of the bankers' accepted "bill of exchange." The quantity of trade acceptances or commercial bills offering in the New York market has been lately described by a practical banking authority very friendly to the acceptance as "negligible."

A novel element in the Federal Reserve Act not found in any of the various banking bills by which it had been preceded was its treatment of the so-called "clearing question." In the past, small banks, the country over, had carried balances with city "correspondents,"

usually of considerable amount. These city correspondents were frequently members of a local clearing house and here and there country clearing houses had been established, but there was no nation-wide system of clearance. The country banks sent such checks on distant points as they might receive to their correspondents and the latter collected them, crediting the proceeds to the remitting banks. This was a wasteful and slow method. The Federal Reserve Act sought to substitute the idea of district clearance on the books of each reserve bank and that of national clearance by creating a central clearance system for the 12 reserve banks at Washington.

The national system was first established, each bank depositing $1,000,000 in gold with the Board, which at once placed it with the Treasury for safe-keeping. A set of books was opened in the offices of the Board and on Wednesday night of each week every Federal Reserve bank telegraphs to Washington the amount of its balance in dealings with other reserve banks. A corresponding entry is made in the books and each bank notified on Thursday of the balance remaining to its credit. Billions of dollars of transfers are made in this way without gold shipment and practically without expense.

The introduction of the district clearance plan was not so easy, but by the middle of 1916 every reserve bank under orders from the Board had established a system of practically uniform character. Under this plan as modified by the Act of 21 June 1917, banks not members of the Reserve System as well as the regular members may deposit with reserve banks checks on other banks for collection. Such checks are not credited at once, but only after the lapse of a period usually two to four days, estimated to be long enough to permit collection. After that period the proceeds are credited and may be drawn upon. Banks which receive such checks for payment must remit without deduction (at par) or else send actual money, but in the latter case the Reserve bank pays the cost of shipping the coin or currency in settlement. The member bank which deposits the checks for collection is charged a small fee (1½–2 cents) per item and may in turn make a moderate charge to its depositor if he desires immediate payment without waiting for the collection of the check to be completed. The district collection system now includes some 16,000 banks, State and National, and is slowly increasing in numbers though it can probably never become complete until the banking system of the country has been entirely unified. Some banks continue to collect through correspondents as heretofore, although the fact that balances with correspondents no longer (Act of 21 June 1917) count as reserve, has discouraged the practice. The new district system has tended strongly to unify exchange charges and to reduce those that were formerly unduly high, though such charges will persist where competition is absent owing to the fact that given localities contain no banks that are members of the Federal Reserve system. Taken with the gold clearing system at Washington, the district system has, however, immensely improved and simplified exchange conditions the country over.

As seen at an earlier point, the chief trouble currently recognized in the American bank note system prior to the passage of the Federal Reserve Act was "inelasticity." By this was meant that there was no way of enlarging the circulation except through the purchase and deposit of bonds, or the importation of actual money. Prior to 1908, the national bank notes had so greatly increased in amount as to require almost all of the floating or "free" supply of bonds for their protection, except those held by investors and trustees, so that the limit imposed upon their issue was almost absolute. It was currently proposed to relieve the situation by extending the kinds of bonds receivable as deposits to protect note issues and the Aldrich-Vreeland Act had taken steps in that direction. As against this plan or proposal it was pointed out that both the practice of other countries and the general theory of banking indicated that the protection properly to be accorded to notes was identical with that to be given to deposits. The abstract theory of banking, moreover, indicates the liquid short-term assets of banks as the safest and best protection for bank liabilities.

This point of view — the so-called "asset currency" theory — was accepted as the basis of the original draft of the Federal Reserve Act. Provision was accordingly made for the issue of notes based on the general assets of the reserve banks; while it was sought to protect the old note-issuing banks (the owners of the bonds held to secure the notes) by authorizing the gradual retirement and redemption of the bonds they had purchased. These bonds for the most part bore 2 per cent interest, and as government obligations were then selling on a 3 per cent basis it was ordered that the new refunding bonds should bear 3 per cent.

So-called asset currency has always been the subject of criticism from a certain school of thinkers who have contended that there was serious danger in the use of such paper because of its possible unsoundness. In order to guard against any such danger the Act therefore defined "eligible" paper with great care, placing stress upon the requirements of short maturity and relation to genuine commercial transactions. Inasmuch as it had been urged by some that the supply of two-name paper available would be too small to serve as a basis for notes it was left to the Federal Reserve Board to determine eligibility of form within the general limits laid down by the Act itself.

The view or theory of currency issue which had been embodied in the original draft of the act was maintained throughout its various changes of form and appears in the final statute. The chief note changes introduced in the course of discussion were as follows: (1) The Federal Reserve notes were made eventual obligations of the government and it was provided that they could be obtained only from the government through the Federal Reserve agent of the bank desiring to issue them; (2) provision was made for a new type of note to be called a "Federal Reserve Bank note" secured by bonds on the same basis as the old national bank notes; (3) the redemption of the bonds held by the national banks was fixed at $25,000,000 a year and the

Federal Reserve Board was authorized to distribute this amount of old bonds among the reserve banks. At that rate it would have required about 30 years to retire the national bank notes and issue either Federal Reserve notes or Federal Reserve bank notes in their place. During the first three years' life of the system, redemptions proceeded at about this rate, but after the entry of the United States into the European War, 2 per cent bonds fell to a low level and the Reserve Board ceased to call upon reserve banks to take them over at par as before. In the original act of 1913, the outstanding notes had to be covered by gold and paper to 140 per cent of their face but by the act of 21 June 1917, this figure was cut to 100 per cent. Due to this and other causes the issue of Federal Reserve notes rapidly increased during 1917 and at the close of the year was near a billion and a quarter of dollars.

As things stand to-day, therefore, the Federal Reserve Act provides an elastic currency, based on business paper, and susceptible of increase as business operations increase and require a larger note issue. Reserve banks discount the paper presented to them by member banks which have themselves discounted it for business men. Such paper may be turned over to the local Federal Reserve agent who will issue an equal amount of notes in exchange. The Federal Reserve bank must, however, carry a gold reserve amounting to 40 per cent of the notes it issues, and of this 40 per cent 5 per cent is deposited with the Treasury as a redemption fund, the other 35 per cent is retained in the Reserve bank's own vaults. The expansive power of the currency thus depends on, and is limited by, the gold holdings in the Reserve banks.

Granting the presence of the necessary gold there is no limit to the volume of notes that may be issued except the limit set by the needs of business and the dictates of sound banking. The question whether to call for notes or to take the proceeds of rediscounts in the form of book credit depends on the decision of the member banks. Federal Reserve banks could, however, if they desired issue their notes in exchange for paper bought in the open market with bank endorsements.

The question of foreign banking facilities is dealt with in several ways in the Federal Reserve Act: (1) Federal Reserve banks may established agencies abroad or name agents and correspondents. They have thus designated the Banks of England, France and Italy and others, but thus far operations have been small owing to the War and its effects. (2) Member national banks possessing capitals of $1,000,000 or more may apply for, and under specified conditions receive, permission to establish foreign branches of their own. In this way, a considerable number of branches have been developed in South America. (3) By the act of 7 Sept. 1916, member banks are allowed to subscribe to the capital of banks formed to engage on their behalf in the foreign trade. Several such banks have been incorporated and have begun business.

The more important step taken in the direction of sound foreign trade finance was not, however, one that had to do with the mere establishment of banking machinery but with the introduction of approved banking methods. Foreign practice had long since recognized the banker's acceptance as the staple method of financing movements of goods. This teaching was embodied in the Reserve Act which provided that paper resulting from commercial transactions in foreign trade and of proper maturities might be accepted by national banks to 100 per cent of capital and surplus. Federal Reserve banks were empowered to rediscount or buy such acceptances; while by later legislation domestic acceptance paper was given similar privileges up to 50 per cent of capital and surplus. Finally Congress adopted a provision permitting national banks to accept drafts, drawn in countries needing a means of remittance to the United States, intended to create a supply of dollar exchange.

An integral element in most of the plans of recent years for banking reform has been the reorganization of relations between the Treasury of the United States and the banks of the nation. As is well known, the sub-Treasury system (dating from 1846 in its present form) and, requiring the actual holding of public funds in cash, is obsolete, being employed by no other country. Deposits of public funds in national banks protected by special security have been made since the Civil War but were only a partial remedy for the evils of the sub-Treasury system. The Federal Reserve Act sought to change the older system by constituting the reserve banks "fiscal agents," and making them also depositories, thus permitting the government to do business at and through the reserve banks just as their banking members may.

When the act was passed the balances of the government were small and there was no haste in carrying into effect this phase of the law. Early in 1916, however, the banks were made depositories of all Treasury balances then on deposit with national banks in the cities where the reserve banks were located, other funds outside these cities being kept as before. During 1916 and the beginning of 1917, the Reserve banks thus became habituated to methods of transacting Treasury business, and so made themselves ready for the great and unexpected expansion of their functions in this field which was to follow, when, at the entry of the United States into the European War in 1917, this small business suddenly assumed new and important proportions. The Secretary of the Treasury had determined to employ each Federal Reserve bank as the head of a district organization designed for the distribution of the bonds whose sale in unprecedented amounts was necessary to the conduct of the war, and in each Federal Reserve district such an organization was quickly developed about the local reserve bank as a centre.

Local bankers and financiers freely gave of their time and assistance to the furtherance of the work, and in each case the Federal Reserve bank proved an efficient basis of organization. The several banks, under instructions issued by the Secretary of the Treasury, received subscriptions to the loan and carried on the immense work of detail resulting therefrom, besides taking charge of the deposits in banks and general banking relationships growing out of the operation.

The Federal Reserve Board itself, besides co-operating closely with the authorities of the Treasury Department in efficiently conducting the loan operations of the Federal Reserve banks, further sought to develop a general policy that would support and aid the banking community at large in taking and distributing the new issue of bonds. For this purpose it first established a special rate of 3 per cent per annum for the discount at Federal Reserve banks of the direct 15-day obligations of member banks secured by the temporary certificates of indebtedness which were issued in order to anticipate the proceeds of the sale of the new bonds.

Carrying further this same policy, it later established a 3½ per cent rate of discount at Federal Reserve banks intended for the 90-day paper of ordinary bank borrowers, thereby enabling the member banks of the system to extend accommodation to bond buyers in the assurance that they would be able to obtain accommodation from the Federal Reserve banks by discounting these notes. In order to aid the customers of banks not members of the Federal Reserve system, it further authorized the member banks to act as agents for non-member institutions by rediscounting the notes of bond buyers who desired to obtain assistance from their own banks without being obliged to transfer their business to member banks. Savings banks and trust companies were assured that the Board would in every way co-operate with them in avoiding shock or disturbance to existing conditions, and that the Federal Reserve system stood ready to extend to them reasonable accommodation in the event of necessity resulting from withdrawals made by depositors in order to purchase or invest in government bonds.

On the night of 2 May the Secretary of the Treasury issued to the press a statement giving such details of the first "Liberty loan" as had been agreed upon up to that time. At the same time he advised the Federal Reserve banks that he had decided to use them as the central agencies for handling the issue. On 10 May the full prospectus was telegraphed the banks to be made public on Monday, 14 May. The subscriptions were to close on 15 June, so that the Federal Reserve banks had but one month in which to perfect an organization for the sale of the proportion of $2,000,000,000 of bonds allotted to the respective districts, and for the handling of details of the subscriptions. The working out in 20 days of a prospectus covering so large an issue, without a precedent in this country to guide, and the placing of $2,000,000,000 of bonds oversubscribed approximately a billion in a month's time, was a remarkable achievement, but the second loan operation, carried through in October, resulted in the sale of nearly four billions of bonds, the amount offered being three billions, and the total subscriptions nearly five billions.

Not only was there no disturbance to interest rates during either loan operation beyond the necessarily gradual increase which follows upon the withdrawal of such great quantities of funds from the market, but the process was accomplished with great technical ease. In former times under the old sub-Treasury system, the withdrawal of subscribed funds in various parts of the country, or even the operations incident to the transmission of these funds from one part of the country to another, created unavoidable and serious difficulties, due to shortage or plethora of money at various points, while exchange rates and conditions were seriously disturbed. All this has been avoided through the operation of the central gold settlement fund, conducted under the supervision of the Federal Reserve Board at Washington. By the use of this fund, the thousands of millions of dollars involved in current government operations have been received in the form of local bank credits, and the proceeds have been transferred to the point where government payments had to be made. As these payments have been effected, local banks at those places have increased their deposits and the proceeds have again been gradually shifted to different parts of the country where production and manufacture were in progress and where payments for material and labor had eventually to be liquidated.

The Federal Reserve system has thus succeeded in its first and most immediate objects — the establishment of a co-operative or centralized system of united bank reserves with rediscount arrangements designed for the relief of hard-pressed banks and for the furnishing of an elastic currency. It has further supplied the demand for an efficient and nation-wide system of check collection. The establishment of a genuine discount market is necessarily a much slower process and time will be required for its complete success. The advent of the European War and the entry of the United States into it as a participant have naturally tended to retard the normal development of the system and in some ways to divert it into unexpected channels. The growth and experience it is obtaining in the financing of the war will, however, serve it in good stead when the time comes for a more normal development of its powers. Meantime, it has proved itself the country's banking mainstay and support in the necessary operations incident to the financing of the struggle.

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13. **SAVINGS BANKS.** Savings banks are of two kinds, stock and mutual.

**Stock banks.**— The stock savings bank is to all intents and purposes quite like a bank of discount, having capital stock, and is, therefore, owned and controlled by the stockholders, to whom the profits belong after paying the agreed rate of interest to the depositors. Such banks are to be found largely in the West and South, there being no such institutions in the Eastern States. They are essentially banks of discount with the word "savings" in their title. They transact chiefly a commercial business and carry comparatively few savings accounts. According to the report of the Comptroller of the Currency, there were 1,529 of these institutions reporting as of 23 June 1915, with capital stock of $92,982,798, loans amounting to $850,304,207, deposits of $1,047,039,650.93, of which $754,443,330 were savings deposits. The depositors numbered 2,977,968, of which 2,380,496 were savings depositors.

**Mutual banks.**— The mutual savings bank, with which this article has mainly to do, is of

an entirely different type. It is, as the above term indicates, a mutual institution, without stock and therefore without stockholders, being owned by the depositors collectively and controlled by a body of trustees who in law represent them, but are not elected or appointed by them. The depositors are, in a sense, partners, in that the profits belong to them and the losses, if any, are legally assessable upon them, the latter process being, however, a rare occurrence.

We can best obtain a clear idea of the savings bank by distinguishing it from a bank of discount. The latter is a stock corporation, organized to receive funds on deposit, which it may treat as its own upon the implied agreement to return the same upon demand. It loans on promissory notes, buys commercial paper, bonds and other securities, issues bank notes and operates quite largely through the checking system, by which the bulk of its funds are dispersed. All the profits belong to the stockholders, upon whom losses fall, should there be any. It is the business man's bank.

The savings bank caters to the small saver. It receives funds on deposit as trustee for the depositor, to invest for his account. It does not, as a rule, make any discounts; buys no commercial paper; issues no bank notes, and honors checks only when accompanied by the passbook of the depositor. It is permitted to ask notice of withdrawal as a protective measure in times of stress, while the bank of discount must pay on demand or suspend. The contract of the savings bank with the depositor is in essence this: That it will accept the funds offered for deposit, invest them according to law in certain prescribed securities, repay the same upon notice (which is, as a rule, waived, although in some instances is enforced in very large banks as a daily procedure), apportion the earnings among the depositors after paying expenses and establishing a surplus or guaranty fund for their protection against losses. Out of the foregoing comparisons we may evolve the following as a fair definition of a mutual savings bank: "A savings bank is a mutual institution conducted for the benefit of the depositors, without profit to the managers or trustees, for the purpose of receiving on deposit, for safe-keeping and investment, such sums as shall be offered by the depositors, repaying the principal on demand or upon legal notice, and distributing the earnings among the depositors as interest-dividends, after paying expenses and setting the remainder aside as a surplus fund for the protection of all."

The savings bank has well been likened to a reservoir into which pour the little streams for the purpose of combining them into a larger stream for mutual investment purposes. The savings bank makes capitalists by the welding power it possesses, making the small sums effective by working them together.

**Origin of Savings Banks.**— The origin of savings banks is in doubt, there being various claimants for the honor of first conceiving the savings bank idea. Daniel Defoe, of "Robinson Crusoe" fame, is mentioned as the first to conceive the savings bank, in a plan whereby the government was to receive the deposits of the people. A French writer has asserted that the idea dates back to one Hugues Delestre in 1610. Such institutions were also formed in Brunswick in 1765; Hamburg in 1778; Berne, Switzerland, in 1787; Basel in 1792; Geneva in 1794. But so far as is known, the savings bank as we know it to-day was the outgrowth of none of these. The movement in England had its inception in the schemes of the Rev. Joseph Smith and Priscilla Wakefield. The former in 1798 conducted a plan whereby it was agreed to receive sums for safe keeping, repaying the same at Christmas-time with a bounty subscribed by his rich parishioners. The deposits could be withdrawn at any time.

Mrs. Wakefield's plan (1799) was a sick and aid society rather than a bank. The members paid a certain sum per month, according to age, and received a pension after 60 years of age. Sick and funeral benefits were also paid. There was the "Sunday Bank" (1808) at Hereford, which was also in the nature of a charity and open Sunday mornings only. Jeremy Bentham established his "Frugality Bank" in 1797.

It is obvious that none of these plans had in them the true savings bank idea. They were all essentially charities, which the savings bank is not. The first man to conceive the proper idea and work it out to a practical conclusion was the Rev. Henry Duncan, a Scottish clergyman, who in 1810, at Ruthwell, Scotland, established the first savings bank that operated along business-like lines and depended upon the earning power of the money received on deposit to carry on the bank. It was this conclusion that from the earnings of the bank the depositors should receive their interest and the bank should pay its expenses, the correct savings bank plan. The result of Duncan's practical plan was the Edinburgh Savings Bank, organized in 1814, which is still a prosperous institution. Following Duncan's plan, savings banks soon sprang up all over Europe.

The savings bank movement in this country naturally followed the movement in England and Scotland. It is admitted that during the early part of 1816, almost simultaneously, the movement began in New York, Boston and Philadelphia. Sometime during that year a letter reached Thomas Eddy of New York from a London magistrate named Patrick Colquhoun in which he outlined the English plan of savings banks. The idea also came to the attention of James Savage of Boston and Condy Raguet of Philadelphia. The result of this simultaneous information was the establishment of the Philadelphia Saving Fund Society, which opened for business 2 Dec. 1816, being the first bank of its kind to receive deposits in this country; the Provident Institution for Savings in the Town of Boston, which incorporated 13 Dec. 1816, being the first to receive legislative sanction; and the Bank for Savings in New York, being, it is highly probable, the first to be conceived but the last to open for business owing to the antipathy of the New York legislature toward banks in general. It was chartered 26 March 1819 and opened for business 3 July 1819. The historical sequence is, therefore: New York the first to conceive, Philadelphia the first to receive money on deposit, and Boston the first to become a legal entity.

**Organization.**— The organization of a mutual savings bank consists of a body of trustees, named in the original articles of incorporation, the charter being in former days issued by special act of the State legislatures; but under the free banking idea, the statutes now prescribe the process necessary to organize a savings bank, and any body of men who may care to do so may form a savings bank by complying with the statutory requirements and obtaining the sanction of the State official in charge of banks, usually termed «Banking Superintendent,» «Banking Commissioner,» «State Auditor,» «State Bank Examiner,» etc., the distinction being in the title and not in the official duties.

**Trustees.**— The trustees are a self-perpetuating body, vacancies being filled by their own votes, and the qualifications are moral rather than financial. Unlike a bank of discount, where stock ownership carries voting power, money power carries no weight with savings bank elections, the trustee being elected for life, the vacancy caused by his death being filled by vote of the survivors.

As a rule these trustees serve without compensation, even the attendance at board meetings being without remuneration, except in a few States where the fee is limited to about three dollars. They are permitted to receive fees as appraisers of real estate in making mortgage loans, and as examining members of the board and for other special services, but these fees are in lieu of service and not in payment of their trusteeship.

The duty of the trustee consists in attendance at board meetings, service on committees, such as real estate valuation committees, examining committees, and finance committees, the latter having charge of the investments of the bank. In the early days of the savings bank the trustees also acted as tellers, clerks, etc.

The relation of the trustee to the depositor is that of a *cestui que trust* — one acting for the benefit of another. The relation of the corporation to the depositor, however, is one of contract.

**Accounts.**— On the opening of an account, the depositor receives a passbook which not only is evidence of his deposit, but the terms under which it is received, and constitutes the contract between him and the bank. This contract, briefly stated, is, that the bank will invest the funds lawfully, manage wisely, repay the same on demand or on a stated notice and use due care in making payments. The contract of the depositor is that he will take good care of the book and promptly inform the bank of its loss, for its protection against wrongful payment, and abide by the bylaws, copy, or part, of which is always embodied in the passbook, and the mere acceptance of the book evidences his compliance with this contract.

Savings bank accounts are of three kinds: (1) single-name accounts, payable to the individual named in the book and at death to his legal representative; (2) the joint account, payable to either of the parties during life, and at death to the survivor; (3) the trust account, payable to the trustee during life and at death to the party named as beneficiary.

**Bookkeeping.**— The bookkeeping of a savings bank is simple. A single transaction will indicate its character. Upon making a deposit the depositor signs his name and gives information concerning his age, birthplace, parents, etc., for the purpose of identifying him in future payments. The book is then issued to him and a deposit ticket made out, the name indexed, and the signature card filed numerically for reference in making payments. Books are always numbered and for every book there is a corresponding ledger account or card. The accounts are kept in groups of one or two thousand or by ledgers for proving purposes. The deposit tickets of the day are sorted according to groups, and entered on a distribution sheet by number and name, with the amount carried to a perforated column at the side. The postings are made directly from the tickets to the card or ledger space. When all postings have been made the proving clerk checks the distribution sheet, from which the stub has been detached, leaving only the number and name as a guide. Turning to the number he verifies the name and inserts the amount posted for that day. The total amount must agree with the detached stub, thus showing that the right amount has been posted to the right account. Drafts are put through the same process, but in paying, the signature is compared with the one on file and as a rule the test questions are asked, the purpose of this process being to show in a court of law, if necessary, that due care has been used to identify the depositor. The savings bank is absolved, in a measure, from the general rule of forgery. If the bank can show that the depositor has written a signature comparing favorably with the original and answered the test questions properly, it is protected against wrongful payment. It is obviously impossible for a savings bank to know personally all its depositors, who, being infrequent patrons, are liable to change handwriting, and the test questions act as a measure of protection both to the bank and the depositor.

The big events of the savings bank year are: First, the trial balance, which is a total of all the accounts, which must agree with the general books and in well-organized banks are kept absolutely in agreement by these periodic tests, made as a rule quarterly or semi-annually. In a bank where the transactions run into the millions this is no light task. Second, the interest computations, which involves the labor of ascertaining the periods for which the various deposits are entitled to interest, computing and posting the same to the various accounts within a period of a few weeks.

**Interest.**— Savings banks as a rule pay interest from quarterly periods, or from the first of the month following the deposit, allowing a certain number of days' grace; thus, money deposited on or before 10 July and remaining in the bank until 1 January, will draw six months' interest; between 10 July and 3 October — three months' interest. Some banks pay from the first of each calendar month if the money is on deposit at the close of the interest period.

**Investments.**— Savings banks are large investors in mortgage loans and municipal and railroad bonds. The law as a rule prescribes the character of bonds which may be purchased,

but in all States, government, State, city, town, village and school district bonds are legal investments. Railroad securities are legal if they conform to the statutory requirements, which for instance in New York are, that the bonds shall be a first mortgage on the property and that the corporation shall have paid at least 4 per cent dividend on all classes of stock for 10 years preceding the investment. The State laws differ as to the detailed requirements, a review of which would be impossible within the limitations of this article. As a rule the bond and mortgage loan is limited to 60 per cent of the appraised value of the property and must be a first mortgage. The proportion of mortgage loans to the total assets is generally stipulated in the law, as for instance in New York, not over 65 per cent of the deposits may be loaned on such security.

**Postal Savings Banks.**— The postal savings bank is in operation in all large countries excepting Germany. The system in this country dates from 25 June 1910. The fundamental idea of the postal savings bank is the receipt by the government through the post-offices of deposits, the payment of which is guaranteed by the government. For detailed description see POSTAL SAVINGS BANKS, article 14.

**School Savings Banks.**— The school savings bank in this country is the result of the work of the late John H. Thiry, a Belgian, who in connection with his work as trustee of the public schools of Long Island City became impressed with the improvidence of the American children and desired in some way to combat the tendency to spend. As a result the first school savings bank was opened in connection with the public schools of the above named place in the late eighties. Mr. Thiry wrote and traveled extensively in connection with his pet scheme, with the result that other banks were formed in various parts of the country after his original plan. For many years, he was the only statistician in the movement, and annually issued a report giving the growth of the system. It was not until the matter was taken up by the savings bank section of the American Bankers Association in the year 1911 that the movement reached the aggressive stage, and under the encouragement of the bankers has grown to large proportions.

The Woman's Christian Temperance Union, Young Men's Christian Association and kindred organizations have loaned their support also, the first-mentioned organization being particularly active in spreading the idea. Mrs. S. L. Oberholtzer (q.v.), of Philadelphia, has given much time in promoting the school savings bank and has published periodic statistical matter in connection therewith. The school savings bank is as a rule conducted along one of two lines: (1) Deposits are made through the medium of the teacher who acts as receiving agent for the school. Deposits are permitted as low as one cent, but in some cases stamps are issued for penny deposits until 10 cents has been accumulated on a card. The pupil is given a pass card as a receipt for the deposit. The deposits from each class are turned in to the principal and by him deposited in a savings bank to the credit of the school savings bank, or himself as trustee. The laws of several States, notably New York and Massachusetts, have legalized this method of procedure, it being deemed unwise to allow the movement to spread without adequate safeguards as to the disposition of the money received on deposit. When the deposits on the pupil's card reach one dollar or more, the amount is transferred to a regular savings bank account in the depository bank, in the pupil's name. Withdrawals from the general fund and from the pupil's individual accounts are permitted, but not encouraged, the signature of the principal and parent being required for statistical and restrictive reasons.

(2) The second method contemplates using the pupils of the higher grades as the active managers of the bank. Some schools have a regularly organized bank, with president, cashier, clerks, etc., who manage the school bank, receive all deposits, keep all records and render proper reports to a supervising head, usually one of the teachers. One of the most popular plans consists of a duplicate card with amounts printed in multiples of five cents. As deposits are made the cards are placed together and the amount punched out, thus making the two records simultaneously. This plan was devised by a school principal in Brooklyn and has met with great favor wherever instituted. Large cities like New York and Chicago have taken up the school savings bank plan, the banks co-operating with the school authorities in promoting the spread of the movement.

According to recent statistics gathered by the savings bank section of the American Bankers Association, for the Comptroller of the Currency, there were 280 cities operating the school savings bank in one form or another represented by banks in 1,925 schools, having 928,784 pupils enrolled, of which 398,540 were depositors, having to their credit $1,792,640.10.

**Bibliography.**— Fisk, 'The Modern Bank' (Chap. XXXI, New York 1910); Keyes, 'History of Savings Banks' (New York 1874); Kniffin, W. H., Jr., 'The Savings Bank and Its Practical Work' (New York 1912).

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**14. POSTAL SAVINGS BANKS. Definition.**— A governmental agency, operating through the post-offices, for the encouragement of thrift among the masses of the people by providing widely distributed and convenient depositories wherein small sums may be placed at a comparatively low rate of interest, with the faith and credit of the government pledged to the repayment of principal and interest on demand.

**History.**— "The proposition to use post-offices as depositories for savings was first made in England as long ago as 1807. Mr. Whitbread, a member of Parliament, introduced during that year in the House of Commons a bill for the benefit of the working classes, the guiding principle of which was that of self-help. Mr. Whitbread considered it wiser to assist people to advance their own interests than to extend help by the giving of alms. His meritorious scheme, however, was received with almost universal disfavor. The press of the

time ridiculed his ideas and treated them as altogether impracticable and visionary. There were then very few savings banks, only eleven being in existence throughout the civilized world.

"In December, 1838, the practice of transmitting money by means of postal money orders throughout the United Kingdom was authorized. By that time the advocates of postal savings banks had become quite numerous, and they found in the successful workings of the money-order system one of their most telling arguments.

"It is interesting to note that the plan of postal savings banks which finally was adopted was proposed by one engaged in commercial banking — Charles W. Sikes, a bookkeeper of the 'joint-stock' bank of Huddersfield, Yorkshire. He presented his composition on the subject to that eminent statesman, W. E. Gladstone, then Chancellor of the Exchequer. He cited many pertinent facts tending to show the need of postal banks, among them being that, although private savings banks had greatly increased in number and deposits, they did not come within the reach of the common or most numerous classes of the people. This, he stated, could be done only by the post-offices, which were accessible to every workman. Mr. Sikes was encouraged, and seconded in his efforts by Mr. Rowland Hill, who had been appointed general secretary of the post-office for life in recognition of his valuable services as a postal reformer. Mr. Gladstone also eloquently supported the bill, which became a law in May, 1861, and on 1 September of the same year the British Post-Office Savings Bank came into being.

"It is well known that Mr. Gladstone was before the English public prominently as a constructive statesman for many years. His opinion of the importance and value of postal savings banks is best given in his own words, uttered in the House of Commons in the year 1888 amid universal applause. He said:

'The post-office savings bank is the most important institution which has been created in the last 50 years for the welfare of the people and the State. I consider the act of 1861 which called the institution into existence as the most useful and fruitful of my long career.'

"Charles Sikes, actively concerned in the adoption by Great Britain of the postal savings bank, was not unrewarded. He was knighted in 1881 upon the recommendation of Mr. Gladstone, then Premier. He was appointed to an important office under the government, and public subcriptions even were made and a valuable gift tendered him in appreciation of his good work." (United States Senate Report No. 125, 61st Congress, 2d Session).

**The Movement for Postal Savings Banks in the United States.**— Following the lead of England almost every considerable nation, with the exception of Germany, which has a splendid system of municipal savings banks, established postal savings depositories. The movement for the establishment of postal savings banks in the United States extended over a period of nearly 40 years. The subject was first brought forward officially in this country by Postmaster-General Creswell in 1871, and met with the immediate approval of the press and the people. Eight succeeding Postmasters-General recommended the establishment of such banks and 80 bills were introduced in Congress between 1873 and 1910 to effect the purpose. The bill which eventually became the law was introduced on 26 Jan. 1910, by Senator Thomas H. Carter, of Montana, and was referred to the Committee on Post-Offices and Post Roads, of which Senator Carter was a member. It was reported back by the committee on the following day. The bill with various amendments passed the Senate on 5 March. It was referred to the House of Representatives on 7 March, where it was extensively amended, and was finally passed on 9 June. The Senate concurred in the House amendments on 22 June, and the bill was signed by the President on 25 June.

**Principal Features of the Postal Savings Law and Regulations.**— The organic Postal Savings Act of 25 June 1910 created a board of trustees for the control, supervision and administration of the postal savings depository offices designated and established under the provisions of the act, and of the funds received on deposit, consisting of the Postmaster-General, the Secretary of the Treasury, and the Attorney-General, acting as ex officio. The board was empowered to make all necessary and proper regulations for the receipt, transmittal, custody, deposit, investment and repayment of the funds deposited at postal savings depository offices. This provision of the original act was somewhat modified by the Act of 4 March 1911. As the matter now stands the Postmaster-General is charged with the designation of post-offices as postal savings depositories, the supervision of postal savings business transacted at depository post-offices and the conduct of the central administrative office at Washington. The board of trustees is charged with the management and investment of postal savings funds after they leave the custody of postmasters. The Treasurer of the United States is treasurer of the board of trustees.

Any person 10 years old or over may open a postal savings account in his or her own name by depositing one or more dollars in any post-office authorized to accept deposits. No person may at the same time have more than one account either at the same office or at different offices. The account of a married woman is free from any control or interference by her husband. Post-office employees are forbidden to disclose to any person except the depositor the amount of any deposits.

A person may deposit any number of dollars, and at any time, until the balance to his credit amounts to $1,000, exclusive of accumulated interest.

Accounts may be opened by the intending depositor in person, or through a representative. A person residing at a post-office not authorized to accept postal savings deposits may open an account at a depository office by mail, through his local postmaster.

After an account has been opened deposits may be made either in person, through a representative, or by mail. Deposits are acknowledge by certificates, issued in fixed denominations which are made out in the name of the depositor and serve as receipts. These certificates are not negotiable or transferable.

A depositor may at any time withdraw all or any part of his deposits, upon demand, from the post-office where the deposits were made. Withdrawals may be made in person, through a representative, or by mail. Postal savings certificates bear simple interest at the rate of 2 per cent a year. Interest begins on the first day of the month following the month in which the certificate is issued and becomes due and payable at the expiration of each full year from the day interest begins as long as the principal remains on deposit. No interest is paid for a fraction of a year.

Amounts less than $1 may be saved by purchasing postal savings cards and stamps at 10 cents each. A savings card with nine stamps affixed will be accepted as a deposit of $1 either in opening an account or in adding to an existing account, or it may be redeemed in cash.

A depositor may exchange the whole or a part of his deposits for registered or coupon United States postal savings bonds, bearing 2½ per cent interest, issued in denominations of $20, $100 and $500. When bonds are issued in exchange for postal savings deposits the balance to the credit of the depositor is reduced accordingly, and he may make further deposits until his account reaches $1,000.

Postal savings bank funds in most countries are invested in the public debt. In establishing postal savings depositories in the United States a radical departure was made in this respect. The organic law, as amended by the Act of 18 May 1916, prescribes that the funds received at postal savings depository offices in each city, town, village or other locality shall be deposited, in the order of precedence hereinafter specified, in solvent banks located therein, whether organized under National or State laws, and subject to National or State supervision and examination, willing to receive such deposits under the terms of the act and the regulations made by authority thereof, and the sums deposited shall bear interest at the rate of 2½ per cent. The law requires that 5 per cent of the postal savings funds shall be withdrawn by the board of trustees and kept with the treasurer in lawful money as a reserve. The word "bank" as used in the law includes savings banks and trust companies doing a banking business.

If one or more member banks of the Federal Reserve System exist in any city, town, village or locality where postal savings deposits are made, such deposits are required to be placed in the member banks, provided they qualify to receive them, substantially in proportion to the capital and surplus of each bank, but if the member banks fail to qualify, then other eligible banks located therein may qualify. If no bank eligible to qualify exists in any city, town, village or locality, or if none where such deposits are made will receive them on the terms prescribed, then the funds are deposited under the terms of the act in the bank most convenient to the locality. If no bank in any State or Territory is willing to receive the deposits on the terms prescribed, then they are required to be deposited with the treasurer of the board of trustees, and counted as a part of the reserve.

The board of trustees is required to take from the banks such security in public bonds, or other securities, authorized by act of Congress or supported by the taxing power, as the board may prescribe, approve and deem sufficient and necessary to insure the safety and prompt payment of such deposits on demand. If at any time the postal savings deposits in any State or Territory exceed the amount which the qualified banks therein are willing to receive under the terms of the act, and such excess amount is not required to make up the reserve fund of 5 per cent, the board of trustees is authorized to invest all or any part of the excess in bonds or other securities of the United States. When, in the judgment of the President, the general welfare and interest of the United States so require, the board of trustees is authorized to invest all or any part of the postal savings funds, except the reserve fund of 5 per cent, in bonds or other securities of the United States. The board of trustees is authorized to purchase from the holders thereof bonds which have been issued to postal savings depositors in exchange for their deposits. The board of trustees is authorized at any time to dispose of bonds held as postal savings investments and use the proceeds to meet withdrawals by depositors.

Interest and profit accruing from the deposit or investment of postal savings funds is required to be applied to the payment of interest due to postal savings depositors, and the excess thereof, if any, is required to be covered into the Treasury of the United States as a part of the postal revenues.

**Statistics for United States System.**— The postal savings banks were opened in the United States on 3 Jan. 1911, at 48 second-class post-offices, one in each State of the Union. Following is a statement showing the growth of the system and giving a summary of its transactions at the end of each six months' period:

| Period Ending | Number of depositories, including branches and stations | Balance to the credit of depositors | Number of depositors | Average principal per depositor |
|---|---|---|---|---|
| June 1911 | 400 | $677,145 | 11,918 | $56.82 |
| December 1911 | 5,132 | 10,614,676 | 162,697 | 65.24 |
| June 1912 | 10,170 | 20,237,084 | 243,801 | 83.01 |
| December 1912 | 12,823 | 28,057,059 | 302,157 | 92.86 |
| June 1913 | 12,820 | 33,818,870 | 331,006 | 102.00 |
| December 1913 | 10,871 | 39,749,530 | 364,286 | 109.12 |
| June 1914 | 10,347 | 43,444,271 | 388,511 | 111.82 |
| December 1914 | 10,346 | 59,145,289 | 496,008 | 119.24 |
| June 1915 | 9,546 | 65,684,708 | 525,414 | 125.02 |
| December 1915 | 9,531 | 74,349,414 | 564,887 | 131.62 |
| June 1916 | 8,421 | 86,019,885 | 602,937 | 142.67 |
| December 1916 | 8,402 | 112,159,191 | 661,911 | 169.45 |
| June 1917 | 7,161 | 131,954,696 | 674,728 | 195.57 |

**Statistics for Foreign Countries.**— Following is a statement giving the principal numerical facts in connection with postal savings bank systems of countries other than the United States, as shown by Statistical Abstract of the United States for 1916, based on the official reports of the respective countries.

| Country | Date of report | Number of depositors | Deposits | Average deposit account |
|---|---|---|---|---|
| Austria [1] | Dec. 31, 1913 | 2,300,407 | $40,297,296 | $17.52 |
| Belgium [2] | Dec. 31, 1912 | 3,013,296 | 204,147,391 | 67.75 |
| Bulgaria | Dec. 31, 1911 | 312,462 | 8,797,965 | 28.16 |
| Egypt | Dec. 31, 1914 | 233,744 | 2,251,803 | 9.63 |
| France | Dec. 31, 1914 | 6,555,992 | 348,858,018 | 53.21 |
| Tunis | Dec. 31, 1914 | 4,238 | 1,564,086 | 369.06 |
| Hungary [1] | Dec. 31, 1913 | 873,780 | 22,852,522 | 26.15 |
| Italy | June 30, 1915 | 6,295,797 | 359,315,380 | 57.07 |
| Japan | June 30, 1916 | 14,204,531 | 126,902,319 | 8.93 |
| Netherlands | Dec. 31, 1914 | 1,671,498 | 74,203,170 | 44.39 |
| Dutch East Indies | do. | 122,429 | 3,829,627 | 31.28 |
| Dutch Guiana | do. | 10,338 | 323,511 | 31.29 |
| Roumania [2] | July 1, 1910 | 218,690 | 11,616,820 | 53.12 |
| Russia [3] | June 30, 1916 | 11,013,000 | 1,565,909,000 | 142.19 |
| Finland | Dec. 31, 1913 | 69,535 | 1,709,448 | 24.58 |
| Sweden | Dec. 31, 1914 | 578,271 | 12,020,007 | 20.79 |
| United Kingdom [4] | Dec. 31, 1914 | 13,514,814 | 927,229,857 | 68.61 |
| British India | Mar. 31, 1916 | 1,660,424 | 49,707,248 | 29.94 |
| New Zealand | Dec. 31, 1915 | 509,085 | 107,872,610 | 211.82 |
| Canada | Mar. 31, 1916 | 173,456 | 40,008,418 | 230.65 |
| British South Africa [5] | 1914–1915 | 260,164 | 28,823,428 | 110.79 |
| British West Indies [5] | 1914–1915 | 97,465 | 6,438,165 | 66.06 |
| British Colonies, n. e. s. [5] | 1914–1915 | 269,486 | 14,480,853 | 53.74 |
| Philippine Islands | Dec. 31, 1915 | 54,434 | 1,601,795 | 29.43 |

[1] Exclusive of check department.
[2] Covers government savings banks.
[3] State, including postal savings banks.
[4] Includes 4,017,659 accounts, averaging 51 cents each, which have been dormant for five years or more.
[5] Covers government and post-office savings banks.

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**15. BANK ORGANIZATION AND MANAGEMENT.** There are three classes of banks in the United States — National, State and private. The National banks were organized to be strictly commercial banks, but some of them acquired large lines of savings deposits, even though the law did not authorize them to do so. The act of December 1913, however, confirmed their action. By the same act the banks may obtain permission to conduct a trust department. The State banks include four kinds of banks — commercial, savings, trust companies, and the three functions combined in one institution. Private banks, in some of the States where they are allowed to operate, conduct their business apart from legal restriction and protection.

By the average person the National banks are considered the safest and most important. The State banks, as a class, are by many not considered so safe nor so important. The private banks are frequently considered as questionable. Such conclusions, however, are not in accordance with the facts. Whether a bank be a National, a State or private bank is not the vital point; but the character and quality of its management is vital.

**National Banks.** — The national banking system was organized under the Act of Congress of 25 Feb. 1863, since which time there have been many amendments to the original act.

A National bank (legally known as a national banking association) may be organized by five or more persons. Application must be made to the Comptroller of the Currency for permission and charter, and the application must state specifically concerning these five points: (1) The name of the association. (2) The place where it is to conduct the banking business, giving names of State, county and city (or town or village). (3) The amount of the capital and the number of shares. (4) The names and residences of the stockholders, and the number of shares for which each has subscribed. (5) That application is being made to enable the bank to operate under the National Banking Law with its privileges and advantages.

The National Banking Law was originally enacted to make a market for the bonds of the United States government, and though apparently selfish its provisions accomplished a great benefit for the business public by placing the bank notes on a safe basis, and by driving from the market the «wild cat» notes. The Act of 30 June 1864 first imposed taxes on circulating notes of State and private banks; and the laws were changed at various times until 3 March 1865, when the tax was made 10 per cent — and it is still the same.

The law could not properly prohibit the issue of circulating notes by State and private banks, because note-issue is an absolute function of a bank, but it could make the issue prohibitive by high taxation — and it did that.

Bank notes are now issued only by National banks, and as security for these the banks must deposit United States government bonds with the Secretary of the Treasury at Washington, D. C., and a cash deposit of 5 per cent of the outstanding notes to provide for their redemption. The Federal Reserve notes are issued by the Federal Reserve banks.

National banks are frequently organized by men who make a business of forming such organizations. For this service they charge the stock purchasers, or the organization, a commission or percentage. This is equivalent to paying a premium on the stock. The organization can, however, be perfected without the aid of a professional organizer, but can seldom be accomplished without involving some legal or organization expenses.

The capital required depends on the size of

the place where the bank is to operate, and ranges from $25,000 to $200,000 or more. If the population of the town is less than 3,000 the capital must be $25,000; if between 3,000 and 6,000 then $50,000 capital will be required; if more than 6,000 and less than 50,000 the capital must be $100,000 and in every place with a population above 50,000 the bank's capital is to be $200,000 or more.

At least 50 per cent of the capital must be paid in before the bank is authorized to open for business, and this must be in cash or its immediate equivalent, not by promissory notes. The balance may be paid in monthly instalments during the next five months; but it is advisable to have all paid in before opening for business. No surplus is required by law to be paid in by the subscribers, but it has become the custom for new banks to start with a paid-in surplus and by doing so the new bank receives the confidence of the public more quickly. Ten or 25 per cent of the capital should be sufficient, although 100 per cent is paid in on some occasions.

Each stockholder of a National bank is liable to an assessment of 100 per cent of the par value of his stock for the liabilities of the bank. The law reads: "The shareholder of every national banking association shall be held individually responsible, equally and ratably, and not one for another, for the contracts, debts, and engagements of such association, to the extent of the amount of their stock therein, at the par value thereof, in addition to the amount invested in such shares." The shares of certain State banks entering the National system are exempt from this liability.

State banks can be converted into National banks, and many banks now in the National system were originally organized under State laws. To enter the National system the State bank must comply with practically the same requirements that are imposed on a new organization. There are, however, certain advantages offered to the State banks, but not so many now as in the early days of the operation of the law. These are the advantages: if the bank has branches it may retain them; the stockholders of such a bank are exempt from the 100 per cent liability on their stock if the capital of the bank is not less than $5,000,000, actually paid in, and if the bank at the time of conversion has a surplus of 20 per cent of the capital, but the 20 per cent surplus must be maintained.

**State Banks.**—These are organized under the laws of the States where they are to operate, and as the laws of each State differ in some respects it would be impossible in this article to give specific statements regarding the organization requirements of the various States. Forms for application to organize such banks and copies of the laws governing the banks can be obtained from the Banking Department of any State, or from the Secretary of State, in such States where there is not a banking department.

In many States the laws have been modeled after the National Bank Law, and in some States the laws have been made more advantageous to the bankers than the national law, and thus give the banks a greater scope in lines of business that rightfully belong to them. If a bank is restricted in the lines of business in which it can operate it is limited in its earning power as well as in its utility to the community.

As the National banks were organized originally, to serve the Federal government and mercantile interests, so the State banks in many States have laws that were formed with the purpose of allowing the banks to serve the general public, and because of these laws they are better public utility institutions than the National banks. If a bank is not a public utility institution in its practice, it becomes narrow in its views and unaccommodating to its customers, and so limits its usefulness.

**Private Banks** are usually organized by one man, but sometimes by several men as a firm. In many States laws have been passed prohibiting any one doing the business of banking without the Federal or State authority. Such laws were enacted because of men who opened banking offices with the apparent purpose to defraud the public. Their success in their evident purpose led the authorities to try to protect the innocent public against such men. These laws, however, are a restriction against private business and prevent honest men from going into the banking business privately, as they can do in any other business. In this respect the laws are unjust. Some of the very best banking institutions in the country are private banks, and some of them have for many years been conducting their business in a manner above reproach and criticism. See PRIVATE BANKS, article 11.

**The Management of Banks** is divided into two main departments — supervisory and active. The supervisory is that of the governments, which consists mainly of periodic examinations and requests for statements of condition with more or less explanation of the items included in the statements.

Each National bank, according to the law, is required to be examined "at least twice in each calendar year," but this law is not fully complied with by the examiners. The Comptroller of the Currency and his assistants are responsible for these examinations. In some cases it is known that more than 12 months have elapsed between the examinations of certain banks.

In some States the laws require two examinations a year, but the makers of the laws, in many States, do not provide sufficient funds for the department having oversight of the work to make the examinations. Both the National and State laws are therefore not complied with in regard to the governmental supervision. But let it be said to the credit of those in charge of the various departments, that even with their handicaps they have, in quite a few cases, prevented dangerous and questionable practices from arising and continuing in banks that otherwise would almost certainly have resulted in heavy losses to or complete failures of the banks.

The active management of a bank is lodged in its board of directors. The National Banking Law requires five or more directors for each bank. The position of director is not simply an honor, or a recognition of success as a business man; neither is it for the sole purpose of giving the bank prestige by the use of the director's name. The directors are in-

tended to be the real and actual managers of the banks. But here also is failure to comply with legal requirements. Probably not one bank in 10 is really managed by the directors. Experience with failed banks has proved that if the directors had done their legal duty the banks would not have failed.

The directors delegate certain duties to the president, vice-president, cashier, assistant cashier, treasurer and assistant treasurer, or other officers, and then in too many cases pay no more attention to the details. The men so appointed must be trusted but the trust reposed in them should not lead the directors to allow them to perform their duties without the active supervision of the board or special committees of members of the board.

The president is the head of the bank, representing the directors to the other officers, employees and customers of the bank, and on the other hand is their representative to the board.

The vice-president is the assistant of the president, if he has any active duties in the bank, and usually has a certain part of the executive work under his supervision.

The cashier or treasurer has special oversight of the cash resources of the bank and of its records, as well as its staff of employees.

The assistant cashiers and assistant treasurers are to assist in the care of the details of the daily work.

In addition to the different kinds of banking institutions mentioned above, as being in the United States, there are two other kinds, the Federal Reserve banks (see FEDERAL RESERVE SYSTEM, article 12) and the Farm Land banks. These have not been dealt with because they are government institutions and the public has practically no voice in the organization and management of such banks. There are 12 Federal Reserve banks and their purpose is to serve the government and the National banks, and the State banks that join the Federal Reserve system. All member banks must be stockholders and depositors in these banks — they have no choice in the matter. These Federal Reserve banks are to furnish aid in the way of loans of currency to member banks when they need it.

There are to be 12 Farm Land banks. Their purpose is to loan money secured by mortgages on farm lands, and the banks are to issue bonds secured by the mortgages. The interest rate on the bonds is not to exceed 5 per cent. In addition to these banks there are to be National Farm Loan Associations formed by men who will borrow from the banks. These associations are stock companies and each applicant for a loan must subscribe for stock equal to 5 per cent of the amount of the loan. The par value of the stock is to be five dollars a share.

The Federal Reserve banks are managed by the Federal Reserve Board and the local officers of each bank. The Farm Loan banks are to be managed by the Farm Loan Board and by the registrars and other officers at the local banks.

The value and utility of these banks have not been demonstrated, and some bankers question both the value and utility of both of these government institutions, while other bankers consider them of great value.

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**16. BANK SUPERVISION.** About 1860 it became evident that some means must be adopted for repressing the mixed banking system then in vogue and to provide a uniform and safe system in its stead. Federal enactment soon provided for a uniform system, and the provisions subjecting National banks to examination by representatives of the Comptroller of the Currency increased the safety of the system. In many States the State banks are examined by officials of the State Supervisor of Banking. National banks are examined every six months. The examiner comes unannounced and the bank is for the time being under his control. He is obliged to examine the books, verify the cash and examine the investments and securities. The difficulty of passing judgment on the quality of all loans is the loophole through which many imprudent, or worse, operations are carried on despite the vigilance of the examiners. Private banks are now, in many States, subjected to special State supervision.

**Benefits of Banking Institutions.**— These institutions afford a permanently safe place where the individual may deposit his moneys. And this is much more of a privilege than may appear on the surface. For not only is the secure place of deposit supplied, which otherwise would be wanting, but the bank practically insures the safety of the funds committed to it: if in any way loss is sustained by robbery or fire or by some other cause, the bank is bound to make good the loss, and this regardless of the fact that the depositor may not be a profitable customer, as many dealers are not. In fact, the number of depositors who simply use a bank as a convenience, whose deposits are not large and whose multiplicity of small checks are a trouble, as they are the despair of the individual bookkeeper, is legion. Nevertheless the bank takes such accounts, holds the money subject to innumerable little drafts which are made good by new deposits equally numerous and small; and thus the active little account is maintained from year to year, often only a source of trouble and expense to the bank, which actually receives no adequate return for its services as warden and agent. It is to be noted, too, that in this country the services rendered the individual by the banks differ greatly from those afforded by like corporations in some other countries, notably in France. To cite one instance: In that country every note when due must be paid to the bank officer in hard cash; a check on that or some other bank, duly certified, would not be received. In fact, the bank's messenger visits the payer of the note and demands the payments of the exact amount in cash, or protest and legal proceedings follow.

**Relation of Banks to the Community.**— But leaving this phase of the subject, a glance

will show how vital is the relation of a bank to the community doing business with it. In a word, it may be said to receive all the money that comes to that community and to disburse it as desired by the customer. Not only so, but when he cannot command the money required to transact his business, the bank may supply the desired amount. Thus it is, estates are cared for, income in the shape of interest is paid, vast sums are committed to its keeping, while by its loans made at times of emergency the bank enables the business of the community to be transacted; and this principle extended stands for the business of the world. It is easy to see that a misfortune to such an institution means a calamity to a community, and a series of them means panic, with its consequences of impoverishment and distress, and sometimes ruin to countless thousands. How disaster in this direction has been wrought in the past those familiar with the history of banking in the earlier days, when banks were not subject to the restrictions of the present time, and when the failure of a bank often meant irreparable loss to innocent holders of their circulating notes, are fully aware. But when we go farther and take the most superficial glance at the great industries of the country, we obtain some conception of what banks and banking mean. Is it too much to say that without credit and banking facilities the unparalleled facilities of our gigantic railway systems, stretching from ocean to ocean and conveying the enormous crops of the country by which we are enabled to feed the world, would be in vain? In the last analysis we shall find that it is not car wheels, but it is money, that moves the great harvests of a continent — as for that matter, of the world. And the money would be lacking but for the banks; these, and not steam or electricity, stand between the nations and starvation.

**Safeguarding Depositors.**— It would seem that under the circumstances no argument was required to establish not only the necessity for adequate safeguards in the shape of stringent statutes, but that measures should be provided to insure strict conformity on the part of the bank officers and directors to the requirements of the banking laws, thus safeguarding the depositor against abuse of privilege or criminal carelessness. The attainment of this object is sought by the provision in national and State legislation, as the case may be, requiring official examination and the publishing of a statement of a bank's condition from time to time as the authorities may deem expedient. There is but one proper bank supervision, and this includes mental alertness to discover the very best methods for despatching business with celerity, for insuring correctness, for guarding most effectually against errors, and to render tampering with the books most difficult and detection most easy. It means, too, economy in the use of time — the article which so many squander lavishly as if, like the waters that pass out from between the mute lion lips of the Nile fountains, it was to flow on forever. Supervision means, also, such oversight as makes the manager thoroughly familiar with the business of the bank, so that he can upon occasion command the fullest information regarding a new department of the business at a moment's notice. The years of a banker's work in the discharge of his heavy responsibilities are not many at the most. From the time he assumes the direction of the affairs of a bank to the time when his own ledger must be closed, a very few decades intervene. When that time has come and he either passes from all work or puts down his pen and vacates his chair for a younger man, it becomes evident that the supervising banker — be he president, or cashier — whoever he may be and whatever his official designation — should be able to hand over to his successor not only the assets of the bank unimpaired, but an intelligible working system such as will enable the new manager to familiarize himself with the details of the business and discover the exact situation with the least delay. But this can only be accomplished by the inauguration of a system as nearly perfect as may be, which, with its comprehensive method of safeguarding checks, will require of him less devotion to such details as it is the province of his subordinates to supervise. That is to say, the more perfect the system in practice the more time will the manager have for the exercise of his judgment upon the most important questions coming before him. It is here that the test of the most efficient bank official lies. Take, for an illustration, the work of supervising the loans made on real estate.

**Expert Examinations.**— It has been held, and is indeed held by many knowing no other method, that to ascertain the value of properties submitted as collateral for loans recourse must be had to some qualified expert, generally some one engaged in buying and selling real estate. The judgment of such an authority has been, and is, accepted as conclusive on the security offered, and determinative as to whether the report shall be favorable or adverse to the loan. But here the question arises, Who shall guarantee the expert? — for experience has too often shown that his judgment may fail, or it may be discovered that the expert was consciously or unconsciously interested in advising the loan; the applicant may have been a friend of his, or — and such cases have been — it may be his own device for getting a loan by applying through the concealed interest of another party. But suppose a more excellent way is to be found by which the bank can be rendered reasonably certain as to the value of the property, that a clear title can be given, that it has real existence as described, both as to environment and prospective value; if he be a wise banker, will he not take advantage of that safer and saner method? And let us suppose, further, that in this way our banker is kept informed regarding specific localities, as to whether they are advancing or retrograding in value, whether the interest is kept up — is it not clear that a banker who has such expert advice is not only freed from duties that would otherwise needlessly weigh upon him, but that his services are to just this extent made more valuable in that with less time expended in searching for details and technicalities he has more time to devote to other important duties? Needless to say, we are not pleading for a title guarantee company or other corporation; we only say this — that where the services of these or kindred institutions are warranted by the business of the bank — and it must be small institutions where the volume of business does

not warrant them—such facilities carrying guarantee of perfect safety should be utilized by the prudent banker.

**Systematic Examinations Essential.**—But be supervision ever so thorough, it cannot serve its proper purpose without a system of right examination—rather of examinations. Unceasing watchfulness can only be maintained through proper investigations, not only to detect fraud but errors of judgment. The usual examinations of books are of but two kinds, those of the directors, and those of the official examiners of the National or State government as the case may be. Of these two methods, that of the directors, when rightly conducted, is most important, and for the obvious reason that the directors are better informed as to the value of paper and local securities than the official bank examiner, as a rule, can be. That the examinations made by directors are too often superficial and perfunctory goes without saying. Of course, in the examinations by the directors, the revision of loans is most important, enabling the board as it does, when conducted in a business spirit, to detect improper advances on an insufficient collateral or inadequate endorsement. It is here the examination should be most thorough, so that the presence of "weak" paper, which often becomes such after the loan has been made, may be discovered and remedied. Obviously in such an examination every piece of paper must be gone over as to time of maturity and collateral, which latter should invariably be produced. Collaterals should all be carefully examined with reference to their proper assignments to the bank, so that there may be no question about its ability to exercise a legal ownership, if necessary. The ticklers, the discount book, and all books pertaining to this most important branch of bank, should be carefully investigated, and the precise facts ascertained. The liabilities of the bank, its deposits and cash on hand, the character of the depositors and borrowers, the condition of the individual and general ledgers, the bad debts of the bank, including especially notes past due, over-drafts when permitted—all these and more should be investigated by the board, and this without bias to any officer or employee of the bank; all of them who discharge their duties faithfully will be glad of an examination which will result in enhancing the appreciation and increasing the confidence of the board as to the value of their services.

To insure the correctness of balances on the individual ledgers it would be well to render a monthly statement to depositors having active accounts, and to others at short intervals. A reconcilement blank, stating that the balance is correct, should accompany the same, to be signed by the depositor, and an envelope addressed to the cashier. If there are errors, the depositor may note them, to the end that they may receive official attention immediately; these reconcilements to be filed by the auditor and checked back by the examining committee.

**Surplus Nominal and Real.**—In some instances it would be advisable for the directors, when making an examination, to employ a trustworthy expert accountant to aid them in their investigations, because such an expert may be able to make a more complete analysis of the condition of the bank than can the directors. Here we venture, in the interests of justice to all, to express the conviction that while banks may continue to fail, shortly after they have secured a certificate of soundness from the National or State bank examiner—as they have failed in the past—no such failure should take place following a like verdict of a board of directors of a bank, though there have been such cases. The official examiner of the National or State government may not be presumed to know the standing of many of the promisors or endorsers of notes. It may be impossible for him to detect worthless paper, though it is supposed to represent thousands upon thousands in value. But no such plea can be accepted for the directors of a bank, some, if not all, of whom should have knowledge of the value of the paper upon which they lend their depositors' money. And what are the directors but trustees of the moneys of others, committed to them in perfect confidence, and to whom no language can too severely be applied, who fail to direct? Here it seems proper to emphasize a practice which is becoming far too common in the management of banking institutions, namely, the practice of carrying on the general ledger a large surplus fund, or undivided profits, through the failure to charge off bad paper which is known to be such. This is a matter to which, in their examination, directors should give their attention, that their bank statement may represent the exact condition of the institution; just such a statement, in fact, as every right-minded director would furnish were the bank his own property. But let us be just to the directors, many of whom are prominent business men, some of them directors in several other institutions and otherwise engaged in business occupations which take all their time, and which make it impossible always for the director to direct and examine, as he would be glad to do. This fact has obtained recognition among leading bankers, who have inaugurated another system of examination, namely, the practice of having the books of the bank examined as often as may be deemed expedient by a committee appointed by the president from the competent clerks, including a chairman of considerable experience. The committee being notified assemble immediately. Without a moment's warning all the affairs of the bank are put in their hands. They count the cash on hand, examine balances, count all securities, examine and compare the sum total of all discounted bills and their collaterals, verify all accounts in the ledgers—in short, they rigidly scrutinize the condition of the bank. No one—no officer even—is allowed to make any transaction without the knowledge of the committee, who take due account of it. Where, as in the large cities, branch banks exist, the affairs of each branch are also examined in the same manner and at the same moment, that there may be no collusion by shifting of ballances, borrowing money or securities to make good a deficiency.

**How Some Banks Examine Themselves.**—The following from a circular letter, convening a committee of examination, will give some idea of the character of the work performed. The first line of the instructions to the committee may read as follows:

On presentation of this order you will at once take charge of the bank, and will not allow

any officer or clerk to do anything without your knowledge.

Then follow specific instructions to the committee: Count the cash in detail. Examine the cash items, and all items composing exchanges, and see if any are irregular, and make full returns to the president. Test all discounted bills, their endorsements and collaterals, and prove the amounts and accompanying securities. Check up all the loans. Verify all extensions and balances of ledgers. Prove all certificates of deposit and certified checks as well as all outstanding vouchers. Prove the cashier's account; make a record of all outstanding vouchers and see that all checks drawn on the bank have two signatures. Verify the expense account. Ascertain whether all charges are initialed by an officer. Prove the teller's difference and submit all items to the president. List all amounts due from banks and verify them, noting any irregularity. Report on amount due from each concern. Scrutinize and report upon clearing-house accounts and margin accounts of the Consolidated, Produce and Cotton exchanges. List all dividend checks unpaid. Check off all stocks, bonds and mortgages. Describe all overdrafts, and see whether the books are properly kept. Report all suspended debts and balances due. Check off, a month back, the discount book and see if all amounts are duly entered. Examine exchange account; see if the entries appear suspiciously low and if there are any debits. Investigate interest account; see if all charges are initialed by an officer. All insurance policies and bonds should be scrutinized and a complete record made of the same. Report on all differences called for on general ledger, and whether they are all known to the officers. State at length your views as to the condition of the bank; report any departure from the method of our system as you understand it. Report any suggestions that may occur in connection with the method of bookkeeping looking toward their improvement. Finally state errors made in the methods pursued in the handling of bills discounted, loans or any other detail of the business.

The fact that the bank's investigating committee enter into possession and assume entire control of the bank's affairs, which they retain without interference or interruption until they have thoroughly satisfied themselves that the books of the bank are correct and its affairs precisely as represented, affords assurance against fraud and clerical errors. It would seem wise that all banks should cause such examinations to be held; where this is not expedient the same methods should be pursued by the directors. If any illustration were desired showing the necessity for rigid supervision and thorough examination it may be found in the astonishing story which has appeared in the public journals. The fact is disclosed that a woman not engaged in business and not known to possess tangible assets was able to obtain from at least one bank, with a reputation for conservatism, loans of four times the capital stock of the institution.

It is a good plan, when an investigation is being made by National or State bank examiners, to appoint a committee of the clerks to co-operate with such officials for the purpose of verifying the investigation.

A theft which had wide newspaper publicity, both because of the very large sum stolen and the prominence of the bank in the city of New York, was where a receiving teller was found to be the thief, although the directors had absolute confidence in his integrity. He used part of the receipts of one day to cover the shortage of the day preceding.

In one bank two individual bookkeepers were in conspiracy with a dealer. They allowed the depositors to draw out more money than they had deposited by covering up the defalcations by false entries.

The officer in charge of the exchange department in one case entered drafts issued by him for a less amount than the face. To illustrate: A $5,000 draft was entered by him as $1,000, and, as he had charge of the "reconcilement," the difference was transferred from one account to another. If a ledger is manipulated, or a certificate of deposit register falsified, it is difficult to discover the fraud.

It is a wise proceeding to compel all employees to take a vacation without notice each year, so that others may become acquainted with their duties. In this way, sometimes, defalcations have been discovered.

In past experience there has been found no more satisfactory preventive against fraud than the changing of employees, without previous notice, for a short time, from one department to another, at least once a year. A constant inquiry should be made as to the conduct and habits of all persons employed by the bank. Such inquiry may not make a weak man strong, but good resolutions may be strengthened by the knowledge that the penalty of wrong-doing will be surely and promptly inflicted.

It is only a truism to say that good bank management and thorough examination are wholly impossible in the absence of a definite system, which enters into every phase of industry. We find it everywhere. The manufacturer who does not know in detail his stock on hand at any time is in as dangerous a position as an engineer without a steam gauge. His steam may be low—the machinery of his business will suddenly stop. His pressure perhaps is high—all his capital tied up in stocks means an explosion—and the receiver gets the pieces.

**Necessity of Method.**—To a right and safe banking system method is a necessary protection. Unsystematic banking is not only a paradox, it is a contradiction in terms. System economizes time, excites invention, expands energy, concentrates power and accelerates results. Without system, determination weakens, purpose crumbles; failure is sure. Subtract system from banking and chaos is left. In banking there is no middle ground between order and confusion, between cosmos and chaos. System, applied to banking, should make it easy for the manager to have its condition constantly before him. Emphasis has been placed upon the value of examinations conducted by bank clerks. But in view of the close relationship of these institutions to the public welfare and the further fact that they are virtually the creation of the Federal and State laws, it is evident, not only that banks should be examined by officials of the respective governments, but that the examinations should

be of the most searching character. A good bank will court investigation. Whether it is true or not, as a recent writer has said, that "bank examiners are not called upon to play the detectives," it is assuredly true that they should discharge their duties with thoroughness and with a realizing sense of their duty to the public. So far as practicable they must see to it that collusion at the time of examination, between teller and discount clerk or other officers, is made impossible, and that neither cash nor vouchers are made to do double duty in the hands of the dishonest, as has been done. It may not be assured that either National or State or directors' examinations will form an infallible guarantee against dishonest practices. But what may justly be expected of these examinations, together with such as the bank officials may themselves institute, is that they will reduce losses through error or fraud to a minimum. No known system affords any guarantee of faultless management; but the best system rigidly applied will produce the best results possible; and for this the public have a right to look.

**Kinds of Bank Examination.**— Official bank examination includes that furnished by the Comptroller of the Currency, the Federal Reserve Board in the case of national banks and the supervising officers of State banks in the case of State banks; there is also examination in many cities by a clearing-house examiner, for banks members of the clearing-house association. Besides, special examinations are provided for, as already stated, by committees of directors, these examinations being made in some cases by accountants selected from the bank's staff and in others special experts. A few banks have thought it wise to have examinations made on behalf of the stockholders generally, in addition to the examinations made by the directors.

**Importance of Examination.**— What can be of greater importance than the thorough, systematic, exhaustive and regular examination of our great financial institutions — our National and State banks, trust companies and institutions for savings whose capital and deposits are expressed by billions? What can be more essential to the welfare of a community of breadwinners and dependents upon them than the assurance that those institutions with which are lodged the means for conducting the vast enterprises of the country and the earnings which have been won by hard labor are conducted in an honest, businesslike way, prepared to meet the demands that may at any time be made upon them? And the key to such a situation — what is it but such thorough supervision, with rigid examinations, as shall inspire confidence and dissipate alarm in hours of financial stringency and tendency to distrust? A mercantile house may fall and the adverse results may be partial and remedial; but when a great banking institution goes down, credit goes, fortunes disappear, the poor are left helpless and the tale of suffering is long and grievous.

No banking institution to-day is the right kind which is conducted as such institutions were 65 years ago. In like manner we may believe that in future years new methods, new safeguards, enforced by an impartial, effective system of promotion of the personnel, will give increased efficiency in bank management, resulting in a greater volume of business, fewer bank failures and heavier balances on the right side of the ledger.

No institution can run itself — except to ruin — least of all a bank. Eternal vigilance is no less the price of liberty than of safe banking; and only those institutions can gain and deserve the public confidence and justify the powers conferred upon them which are managed under a supervision that is searching and thorough, including examinations which are rigid and relentless.

WILLIS S. PAINE,
*Author Paine's 'Banking Laws.'*

**17. COMMERCIAL PAPER.** The element of credit in the business world arises from two fundamental causes: (a) The fact that the merchant and the manufacturer can profitably use more capital than he possesses and can make money by borrowing money; and (b) if the time of payment is postponed, the buyer can turn goods into money before the agreed time of payment arrives. Therefore, business men must either borrow money to buy goods or postpone the date of payment for goods. Out of the first process arises commercial paper, and out of the second the "book account," now the principal form of credit in this country.

The usual methods of borrowing are: (1) Private loans from relatives and friends; (2) loans made directly to the borrower by the home bank, either in the form of loans on his promissory note, or indirectly in the form of bills receivable discounted; (3) loans in the form of commercial paper, which is a floating debt — borrowings in the open market.

The term commercial paper is, therefore, used to designate those instruments of indebtedness — promissory notes — which are issued by business men for the purpose of obtaining funds in the open market or which are given in settlement of business obligations and sold in the open market. They are to be distinguished from the ordinary promissory notes given to settle debts or to obtain money on a deferred payment, in that the transaction is impersonal, and an intermediary is employed to effect the sale. Legally there is no distinction, both being the same obligation in law.

There are two forms of commercial paper: (1) Single-name paper; (2) double or two-name paper, commonly called "receivables."

Single-name paper is the sole obligation of the issuer, put out in large denominations (usually $2,500 and $5,000) and sold through the medium of a commercial paper broker to banks and bankers. The proceeds of single-name paper are, or are presumed to be, used for the purpose of paying bills promptly in order to obtain the cash discounts, which are quite generally given for quick settlements.

The two-name paper or the receivable is the note given by the buyer to the seller and by the latter sold in the open market for cash. The payee thus anticipates its due date.

The advantage of single-name paper to the banker lies in the fact that it comes in large and uniform denominations, is of short maturity and the lender is under no obligation to renew, for he purchases the paper strictly on an impartial and impersonal basis.

The very favorable experience that banks the country over have had with commercial paper and its intrinsic soundness have made these instruments a favored investment in banking circles. Inasmuch as a bank must keep its funds invested in order to make money, and yet have them in such form as to be readily convertible into cash to meet the demands of its depositors, a body of liquid assets must be maintained, which will both produce an income and promptly liquidate itself. Commercial paper conforms ideally to this test in that its life is short, and its payment under ordinary conditions certain. Bankers are therefore coming to look upon their commercial paper as next to cash as a quick asset, treating it as a secondary reserve.

In order to purchase paper of firms in all parts of the country intelligently, as well as to have credit information about their own customers, banks are now operating well-organized credit departments whose function is to gather and classify credit information bearing on the firms with which they deal and whose paper they buy.

This information consists of the credit statements, usually digested on the bank's own forms, with provision for setting in apposition the various items from year to year for the purpose of indicating the progress of the firm. In addition there are the reports of the great mercantile agencies, Dun and Bradstreet, which give the history and credit standing of the firm, and reports of judgments, liens, transfers of property, etc., that would affect the credit risk.

To the issuer, the benefit of commercial paper as a borrowing medium lies in the wide and steady market, which the banks of the country afford, the lesser rates of interest obtainable in money centres and the cash discounts explained below.

The great advantage of single-name paper is due, as above stated, to the fact that the proceeds are applied to the payment of bills, which when met within the cash discount period are allowed a deduction. A simple illustration will show the profitableness of such a transaction.

Let us suppose a merchant owes $1,000 for an invoice of goods; the terms are "2 per cent, 10 days," which means that if the bill is paid within 10 days of the date of the invoice he can settle for $980. He has no funds, but good credit. He, therefore, makes a promissory note, due let us say in three months, for $1,000, and through the process subsequently described sells the instrument to a bank or banker at the prevailing rate of discount, which would not ordinarily be as high as 6 per cent; but assuming the latter rate, the discount would be $15, plus the broker's commission, which would still allow a fair margin of profit for him. He has in addition the three months' time in which to turn the stock into money to meet his note. Ordinarily the "best names" as they are called, meaning the firms in the highest credit standing, are able to borrow at from 3 to 4 per cent making the single-name paper a highly profitable method of borrowing.

The "2 per cent 10 days" discount is equivalent to 72 per cent a year. The merchant by settling the bill within the discount period has saved $20. If he were to make money as fast as this process indicates within that period of time, he would have to employ the fund at the rate of 72 per cent a year; for 2 per cent in 10 days is equivalent to 6 per cent a month.

**Single and Two-Name Paper.**— Single-name paper is an outgrowth of the Civil War and the Greenback disturbances. Before the war merchants made infrequent trips to the trading centres and stocked up for months ahead, giving notes for their bills with long maturity. Owing to the uncertainty of the amount that would be received for the bill at maturity, due to a depreciating currency, a custom soon arose of allowing the buyer a cash concession for prompt payment. But this necessitated borrowing facilities. The home banks being unable to loan in such large amounts, the merchant conceived the idea of making out a statement of his affairs, and submitting to bankers in the large cities, with his notes in large and uniform amounts, and payable at a time when he would be in funds. From the funds so secured he was able to take advantage of these concessions and therefore buy at a reduced price. The plan worked so well that intermediaries sprang up as a natural sequence, to find buyers for such paper and borrowers for banks having funds to invest.

The sole advantage of two-name paper lies in the fact that it carries the strength of an additional name by endorsement, and is *prima facie* evidence of a business transaction. This form of paper is not a factor in American business methods, it being the common custom to buy and sell on open book credit, settling the obligations in cash as above stated. In a few lines, such as lumber, musical instruments, agricultural machinery, etc., notes are given in settlement; but this form of paper is greatly in the minority. The cash discount system is so widely adopted and so largely used that it may be said to be the prevailing custom in this country and is the reason for the prevalence of single-name paper.

**Selling and Buying.**— Both single and two-name paper is sold through the medium of the commercial paper broker, who acts as the go-between between the borrower and the banker. The broker maintains a well-organized credit department, which investigates each concern for whom the broker sells, obtains full information as to its affairs and classifies and arranges same for submission to the lender.

The commercial paper broker acts as selling agent only and never guarantees the paper, except as to its authenticity. He is usually a man of high standing, with strong banking connections, a large and valuable clientele, a name to protect, and therefore uses due care in putting out paper so that only the risks that are in his judgment strong are offered.

The information submitted consists of a condensed statement showing the various items which constitute the firm's assets and liabilities in uniform arrangement, as follows: Assets — Cash; merchandise; accounts receivable; bills receivable. These four items constitute the "quick assets." Then follows the fixed assets, such as real estate, furniture and fixtures, patents, investments, good will and other assets. The quick liabilities consists of: Accounts payable and bills payable, the latter term including both the single and double-

name paper; then follows the other liabilities of the concern, such as mortgages, stock issues and other obligations.

The purpose of the above arrangement is to enable the banker to readily ascertain the ratio between the quick assets and the quick liabilities, the purpose being to determine the relative safety of the credit risk. It is well settled in all credit circles that a firm should have quickly available at least $2 for every $1 of quick debts, thus allowing for a shrinkage of 50 per cent before the other assets would need to be drawn upon to settle the firm's obligations. In some lines, such as meats, groceries, etc., where the shrinkage is light and a quick sale possible, a narrower margin is permissible —as low as one and one-half to one; but in a seasonal or specialty line, such as millinery or ladies' wear, subject to fashion and change of seasons, a large margin is generally desired.

Having the information classified, the broker submits the same to his clients, who, if in the market and satisfied with the rates, will purchase the paper on option; that is to say, with the right to return within a certain time, if upon further investigation it is not desired. The investigation is made through bankers, who have either purchased the paper before and are acquainted with its value, or the home banks, which are fully conversant with the borrower's affairs from close observation. Such references, together with mercantile firms with which the borrower has had business dealings, are furnished on the credit statement. This process is called "checking" the paper.

In purchasing commercial paper the banker is usually concerned about the following points: First, the statement should be recent, not over six months past. Second, it should be an audited statement made by a firm of public accountants, whose sole object is to present a correct statement of fact. Third, the ratio of quick assets to quick liabilities should, as a rule, be at least two to one. Fourth, the character of the business. Most bankers prefer staple articles to businesses which cater to fashion or seasonal demands. Fifth, to scatter the risks territorially as well as to the various lines of merchandising. Being satisfied on each of these points, he is in a position to purchase with intelligence.

It is a rule of banking that a firm should not issue both single and two-name paper, and one of the surest tests is the presence or absence of odd cents in the item "bills payable." If the item is in an even amount it is good evidence that only single-name paper is issued. If there are odd cents it indicates that the firms' bills receivable have been sold, thus parting with one of its quickest and best assets, and is a practice that is frowned upon by bankers who know the science of commercial paper.

Under the Federal Reserve Act, commercial paper has been given a new dignity and standing in the financial world. The Federal Reserve banks are permitted to rediscount paper that conforms to certain qualifications, the essence of these conditions being that the paper shall arise from a business transaction and be of short maturity. This process enables a bank to cash in its holdings on a few hours' notice, a very marked advantage in periods of unrest. The Federal Reserve banks may in turn use such paper as the basis of note issues, for as long as the Federal Reserve bank has $40 in gold for every $100 in paper, it may put out $100 in bank notes, thus making commercial paper the foundation of our circulating currency.

**Instruments of Credit.**—The instruments of credit in this country are as follows:

1. *Negotiable bills of exchange,* which are unconditional orders in writing addressed by one person to another, signed by the person giving them, requiring the person to whom the order is addressed to pay on demand or at a fixed or determinable future time a sum certain in money to order or to bearer.

2. *Negotiable promissory notes,* which are unconditional promises in writing, made by one person to another, signed by the maker, engaging to pay on demand or at a fixed or determinable future time, a sum certain in money to order or to bearer.

3. *Bank checks,* which are bills of exchange, drawn on a bank and payable on demand.

4. *Drafts,* which are bills of exchange, and are subject to the same rules of law as bills of exchange. An able writer has characterized drafts as follows: "A draft is an order in writing for money, drawn upon the custodian of funds belonging to the drawer, or subject to his order. It does not presuppose any other commercial transaction. A bill of exchange is a similar instrument based usually on a sale or purchase of goods." In this country the word "draft" is commonly applied to all instruments of this sort that are payable within the United States, and the term "bill of exchange" to those payable in foreign countries.

**Acceptances.**—The term "acceptance" is defined by the Federal Reserve Board as "a draft or bill of exchange drawn to order, having a definite maturity and payable in dollars, in the United States, the obligation to pay which has been *accepted* by an acknowledgment written or stamped and signed across the face of the instrument by the party on whom it is drawn; such agreement to be to the effect that the acceptor will pay at maturity according to the tenor of such draft or bill of exchange without qualifying conditions."

A bill of exchange is defined by the English Bills of Exchange Act as "an unconditional order in writing addressed by one person to another, signed by the person giving it, requiring the person to whom it is addressed to pay on demand or at a fixed or determinable future time, a sum certain in money to or to order of a specified person or to bearer." An "acceptance" is, therefore, where A commands B to pay to C, or to his order or to bearer, a sum of money absolutely on demand or at a certain future time. A is the drawer, B the drawee and C the payee. If B agrees to comply with the order, he writes the word "accepted" across the face of the instrument and signs his name, together with the date of the acceptance, the date that it is payable and the place where it is to be paid. Upon so signing, B becomes the acceptor, and the document is an "acceptance." The acceptance makes it essentially the promissory note of the acceptor.

The time bill of exchange, or acceptance, has a fundamental purpose which neither the promissory note nor the commercial draft pos-

sesses. That purpose is to facilitate the mutual offsetting of debts between individuals, as well as nations. Acceptances, or time bills of exchange, pass from hand to hand the same as money. They serve the same purpose as the transfer of gold itself in the cancellation of debts. Abroad they have long been considered as the easiest and cheapest form of credit instruments.

Economists regard acceptances as a sort of special currency. Such really has been their use for the last two centuries in the Old World, where acceptances have been employed between business houses in the settlement of accounts. They circulate among banks which buy and resell them according to their needs until they are negotiated to the central or government bank of the country.

Briefly stated, the use of the acceptance is as follows: The seller of the goods draws a bill of exchange on the buyer, the buyer accepts the instrument and returns it to the seller; he negotiates it to a bank or sells it in the open market, thereby receiving payment for his goods soon after they are delivered. The buyer has the time between his acceptance and the date of payment to turn the goods into money to meet the obligation when it is due, and the seller has his funds as soon as the goods are accepted.

Acceptances are a new form of credit instrument in American banking and business circles. Prior to the inauguration of the Federal Reserve system they were quite unknown, but the Federal Reserve Act has made specific provision for such instruments, and the Federal Reserve Board has issued detailed regulations concerning the issuance and the purchase of such paper. They are fast coming into popular favor, being a form of instrument which is readily discounted at the Federal Reserve banks. In January 1918 acceptances constituted 25.9 per cent of the total earning assets of the Federal Reserve Banks.

The parties to such instruments are:

*Drawer.*— The party who signs or executes the bill of exchange, check or draft.

*Drawee.*— The party to whom the bill of exchange or draft is addressed, and who is ordered to pay it.

*Acceptor.*— The drawee after he has signified or promised to pay the bill of exchange or draft. The promise should be in writing and is usually written across the face of the bill or draft.

*Payee.*— The party to whom the bill, note, check, draft or other instrument is made payable.

*Endorser.*— The payee, bearer or other party who writes his name on the back of the instrument for the purpose of transferring it.

The terms used in connection with commercial paper are:

*Endorsement.*— A technical act of the law merchant, whereby a party writes his name upon a duly executed, negotiable instrument, with or without terms of contract or liability, according to the law merchant.

*Endorsee.*— The party to whom the endorser transfers the instrument.

*Holder.*— The party who holds or possesses the legal title of the instrument. He may or not be the true (equitable) owner.

*Dishonor.*— By refusing to promise to pay (accept) or to pay the bill or note it is said to be dishonored.

*Protest.*— The evidence of dishonor, usually made by a notary public, in the shape of a certificate setting forth presentment, refusal and its reason.

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WILLIAM H. KNIFFIN, JR.,
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**18. BANK AND TRUST COMPANY ADVERTISING.** Endeavoring, by forceful, well-planned advertising, to secure new depositors and customers for a banking institution, or to increase the dealings of present customers with it, is a comparatively recent development of the business, both in the United States and abroad.

Formerly, about the only advertising considered proper for a bank and trust company was the publication of its financial statement and a "card" with the names of the management, together with the barest statement of the services rendered by the institution. But of late years, partly on account of the great advances made in general advertising and partly because of increased competition in the banking business, many institutions have gone into the matter of advertising more fundamentally, either putting that branch of their activities into the hands of agencies specializing in that kind of work, or employing a publicity or advertising manager to devote his entire time to the advertising of the institution.

Naturally, it is only the larger banks that can afford such an arrangement. Smaller institutions must either turn the work over to one of their officers or employees or make use of the services of some agency supplying a ready-made or specially prepared advertising service for financial institutions.

Banks and trust companies which are most successful in their advertising usually make an annual appropriation in advance to cover all advertising expense, and this item of the budget is subdivided to meet the cost of these various divisions:

*Management.*— Salary of advertising manager, if one is employed.

*Space.*— Newspapers, street cars, billboards, moving picture theatre, etc.

*Copy.*— To pay for the services of an advertising writer or for the work of advertising agencies in the preparation of the subject matter of the advertising.

*Mechanical.*— Under this head are included the printing, engraving, lithographing, art work, etc., required in producing the bank's advertising matter.

It is difficult to lay down any hard-and-fast rule concerning how much a bank or trust company can legitimately spend for advertising. The trustees of mutual savings institutions feel that they have no right to spend any

of their depositors' money for this purpose. So they do practically no advertising at all. But other banks are spending a good deal of money in advertising. The sum differs according to the amount of competition, the size of the bank and other local conditions. Investigation has brought out the fact that the average advertising expenditure probably is about in the proportion of $1 for every $200 of deposits, that is, a bank with $2,000,000 deposits will spend $10,000 a year in advertising.

The facts concerning a banking or fiduciary institution and the services it renders the public that may properly be advertised include capital and surplus, governmental supervision, personnel of directorate and management, physical protection, age and experience, interest on deposits, business or investment counsel, care of property, trusteeships, execution of wills, loans, discounts, certificates of deposits, banking by mail, foreign and domestic exchange business information, business references, letters of credit, travelers' checks, collections, courteous service, the necessity and rewards of thrift, the use of safe deposit boxes, co-operation with the government in war financing, etc.

The tried and approved media of bank advertising include daily and weekly newspapers, financial journals and magazines, bank directories, street cars, billboards, moving picture theatre advertising, personal letters, facsimile letters, booklets, "house organs" (i.e., little regularly issued papers or magazines, either "syndicated" or especially prepared by the bank for free distribution), financial statement folders, calendars, bank window cards, and a great variety of specialties, novelties or souvenirs.

Of late, a movement has been started toward the co-operative advertising of banks. That is, the banks of a city or county will get together and pool a certain proportion of their advertising appropriations and use the money for a campaign of popular education in thrift or banking functions. Space is used in local newspapers or other media. In some cases the names of all the banks co-operating in the movement appear in connection with the advertising. In others, the articles are not signed but appear as editorial matter.

Banks in some communities have formed banking publicity associations for mutual benefit, and a Financial Advertisers' Association was established in 1915 as a department of the powerful organization known as the Associated Advertising Clubs of the World.

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T. D. MACGREGOR,

*Vice-President Edwin Bird Wilson, Inc., 14 Wall Street, New York.*

**19. BANK NOTE ISSUES.** In principle a true bank note does not differ from a bank check. The purpose of either is to transfer credit. The granting of credit on the books of the bank precedes the issuing of notes by the bank or the drawing of checks by the depositor; or, at least, the bank pays out a note in discharge of an obligation of some kind, and this is the usual way in which a depositor employs a check. He may, of course, use it as a means of obtaining currency from the bank for his own needs; but here, again, there has been only a transfer of credit from the bank to the depositor in circulating form. If checks were certified, issued in convenient denominations and so engraved and printed as not to be easily counterfeited or raised, they would be substantially the same as a bank note, for a certified check becomes an obligation of the certifying bank. But a bank note ought to be somewhat better secured than a check, and for this reason: a check is accepted or not as the person receiving elects; but a bank note, though not a legal tender, must be taken in the ordinary course of trade by merchants and other business men, who cannot discriminate between different kinds of money in circulation. Therefore, the notes should be given some extra security, as a first lien on assets or by a guaranty fund.

Experience in the banking history of the United States and other countries has shown that by employing either of these expedients bank notes can be made safe beyond question. The best provision for current safety, and the best check against inflation, is the test of daily redemption, in the standard metal, applied through the clearings.

If banks in the issue of their notes are left unrestricted beyond the simple safeguards above mentioned, the amount of circulating medium in the shape of bank notes will be determined by the wants of trade — that is, by the requirements of those who deal with the banks. In the larger cities deposit credits to be checked against will best serve; in the farming communities more currency will be called for. How much currency is needed in any one locality, or whether bank notes or checks are most serviceable, must be left, not to the bank nor to the government, for only the person desiring to use the credit can correctly gauge either its degree or kind.

The early banks in the United States were of diverse kinds, but there were two general systems of note issues, one where the notes were based on bonds, the other where the notes were emitted on the general credit of the issuing banks. The latter — as in Indiana, Iowa, Missouri, Kentucky, Louisiana, Virginia, and especially in New England — were good, the notes not only being of great service but proving sound. In other States where bonds and stocks were pledged as security, the notes proved unsatisfactory. Generally, in those days, the notes exceeded the deposits in volume. Where, as in New England, under the Suffolk system of redemption, which was a plan whereby the notes were redeemed at Boston through the Suffolk Bank, the notes showed a close correspondence in volume to the demands of trade. It was found, also, in practice that redemption was an effectual check against

over-issue, and that the banks did not keep the volume of notes up to anywhere near the permissible limit. The experience in New England, as in other sections of the country, established the fact that only simple provisions were necessary to ensure the safety of the notes. Inflation of bank credit — that is, the granting of more credit than prudence sanctions — is possible where the coin reserves are inadequate or the bank management reckless, but inflation of bank notes, under a proper system of redemption, is not easy. Banks cannot keep their notes in circulation any longer than they are needed. Every issuing bank receiving the notes of another bank will want to have that note redeemed to make place in the circulation for one of its own notes on which it will make a profit; moreover, it will want to have the notes of other banks redeemed to replenish its own reserves upon which its credit structure is based. Private holders of the notes will deposit them as received in the course of trade.

Bank notes save the abrasion incident to circulation of coin, and they are more economical than gold certificates, for while the latter are issued only against a like equivalent of the standard metal, bank notes may be issued with safety against a much smaller reserve. Credit bank notes also have one immense advantage over notes issued against United States bonds, for while the latter represent an investment of an equivalent amount of capital, and are therefore a source of expense even when lying idle in the bank's tills, a true bank note while in the possession of the issuing bank represents no more than the cost of the paper and the engraving. When it is paid out, in exchange for the obligation of others, or against checks of depositors, and a reserve set aside against it in the vaults of the issuing bank, it then becomes of value.

The Canadian and Scottish banking systems afford familiar examples of the issue of bank credit notes. From the imposition of the 10 per cent tax on State bank notes in 1865 bank credit currency has been prohibited in the United States. Prior to the adoption of the Federal Reserve system (q.v.) notes of National banks were issued against a deposit of a like amount of United States bonds. The Federal Reserve Act provides for the issue of notes to member banks against specified commercial papers, the Federal Reserve banks emitting the notes to hold a reserve of 40 per cent against them. These notes, however, are not true bank notes, issued by the banks themselves, but obligations of the government, issued only through special institutions under government control.

ELMER H. YOUNGMAN,
*Editor The Bankers' Magazine.*

**20. GUARANTY OF BANK DEPOSITS.** This has been effected by legislation in some States (Oklahoma, Kansas, Nebraska, Mississippi, South Dakota and Washington), and individual banks in some cases have taken out policies of insurance to protect their depositors. (The Attorney-General of the United States has ruled that this is a legal use of the funds of a National bank). The United States Supreme Court, on 3 Jan. 1911, in cases coming before it from Kansas, Oklahoma and Nebraska, decided that the bank deposit guaranty laws of those States were not in conflict with any provisions of the Constitution of the United States, and the court further laid down the principle that the legislature may not only regulate banking but may prohibit it except under such conditions as it may prescribe.

In principle, the guaranty or insurance of bank deposits rests upon mutual responsibility. It is objected to on the ground that it tends to place new and perhaps recklessly managed banks on a par, as regards safety, with old-established and carefully managed banks. To this objection the reply is made that there ought to be no degrees of safety in banking, but that all deposits in banks should be made safe beyond question, and that in point of service the old bank will tend to have the advantage anyway through the friendships and connections created by its long existence.

Experience with the laws now in force would seem to indicate that the results depend upon the character and administration of these laws. Some of them have recognized that where joint responsibility is assumed, greater stringency in the regulation of banks is essential to prevent sound and well-managed banks from being called on to pay the losses of those imprudently managed. In Texas, after six years' trial, the Commissioner of Insurance and Banking found that each share of stock of the par value of $100 had paid only three and one-half cents annually for deposit insurance, and he states that among depositors in guaranty fund banks the closing of one of these institutions creates no more panic than the closing of a grocery store. Some of the other States have had less satisfactory experiences, and the fact that after long agitation but few States have adopted the law, and that it has not yet been applied to the National banks, warrants the conclusion that the experiences thus far have not justified the general extension of the plan.

A safety fund, originally designed to protect the noteholders of the State banks of New York, was later made applicable to the deposits of banks, and the system broke down, chiefly because the fund provided was not large enough to protect both noteholders and depositors.

Through clearing-house examinations of member banks, a qualified form of deposit guaranty has been instituted, although direct responsibility is not assumed. The ability, by careful oversight, to detect banking weakness at its inception, renders a bad bank failure almost impossible. A desire to preserve local banking reputation has sometimes led bankers to unite in the protection of depositors in failed banks — the case of the Walsh bank failures in Chicago being the most familiar example.

ELMER H. YOUNGMAN,
*Editor The Bankers' Magazine.*

**21. TRUST COMPANY. Definition.** — A corporation authorized by law to act as trustee, or to accept and execute trusts of various descriptions; a corporation empowered to act in a fiduciary capacity. This is the primary meaning of the term "trust company," and is expressed in the name given to such a company in Australia, — a "trustee company."

In current usage, the term is applied to any corporation organized under the trust company laws of the several States, whether such corporation actually undertakes any trust business or not. While these laws invariably grant certain powers to accept and execute trusts, including always the power to act as trustee, they also grant other powers, of considerable variety in the different States, of which more or less limited banking powers are always a part. Except with the oldest companies, the volume of banking business usually exceeds that of trust business; and it results that to the average person the trust company presents itself as a peculiar kind of bank. In fact many of the smaller and newer trust companies do practically no trust business, and their actual functions are those of ordinary banks of deposit and discount, or of savings banks, or of a combination of the two. On the basis of the business actually transacted, therefore, the trust company may be defined as a financial corporation authorized to exercise both banking and trust functions.

**Functions.** 1. *Trust Functions.*— The function which gives the trust company its name is that of accepting and executing trusts. In the exercise of this function the trust company performs the same acts and assumes the same responsibilities as an individual acting in like capacity. Trusts are received from natural persons or individuals, from corporations, both public and private, and through appointment or approval of courts of law. It is convenient to consider the trust functions under these heads:

(a) Trusts performed for individuals under private agreement. Most of these trusts involve acting as trustee or agent, but they are of great variety as to purpose and as to duties required. The most common is that of acting as trustee or agent for the management of property, real or personal. In this capacity the trust company takes entire charge of the property, collects income, collects principal of securities when due, reinvests capital funds if desired. If the property be real it looks after repairs and improvements, keeps the property rented and insured, pays taxes, collects rents. It remits or accumulates income, according to the contract.

It handles the separate estates of married women; looks after the investment and care of funds of educational or benevolent institutions; acts as custodian of valuable papers and securities; handles escrows; collects income which is receivable at long intervals or at uncertain periods and distributes it per contract in monthly instalments; acts as agent for the payment of such regularly recurring items as insurance premiums, rents, taxes, etc.; looks after property interests of professional men, absentee property owners, women, invalids, the aged and others who, from choice or necessity, wish to avoid the care of their property either temporarily or permanently. These illustrate some of the many kinds of "individual trusts."

(b) Trusts received through appointment or approval of the courts. In most States trust companies have a large volume of "probate business," consisting of the execution of trusts received by appointment of court or by wills of deceased persons,— acting as administrator, executor, trustee under will, guardian of the property (and in rare instances of the person) of minors, curator or committee for persons of unsound mind, etc. As a rule trust companies are legal depositaries for court funds and for persons acting in fiduciary capacities. Trust companies handle a large amount of "insolvency business," acting as assignees, receivers and trustees in bankruptcy.

(c) Trusts performed for corporations, private and public. The trust company is practically indispensable to the large corporations of to-day, as well as to many of the smaller ones. It acts as trustee under mortgages or deeds of trust securing bond issues, as transfer agent for stock, as registrar for stock or bonds, as custodian or manager of sinking funds, as fiscal or financial agent for various purposes, for States, municipalities, railroad and industrial and other corporations. It pays bonds, coupons, interest. It may take charge of the disbursement of dividends and interest, attending to the publication and mailing of notices, etc. For syndicate managers, voting trusts, etc., it issues and collects calls for instalment payments and computes and distributes to the proper parties the amounts of their participations in the proceeds. It acts as depositary of cash and securities under varying conditions; as depositary and trustee for underwriting syndicates; as agent to receive subscriptions for securities and to deliver same when issued. Its services are often used in corporate financing and reorganization. It may of course perform for corporations trusts of the kinds already described as undertaken for individuals under private agreement.

2. *Banking Functions.*— Trust companies have always transacted a large amount of savings banking business, and years ago became formidable rivals of the savings banks in this field. In more recent years they have invaded the field of commercial banking. While the laws of many States formerly limited their functions in the field of commercial banking, in particular forbidding them to discount commercial paper, and although they are still so restricted in some States, the tendency in recent years has been to remove these restrictions and in many States at present they have all the banking powers of ordinary National or State banks, except the right of note-issue.

3. *Safe Deposit Business.*— Trust companies very generally maintain safe deposit departments, in which they rent private boxes for the safe-keeping of securities, valuable papers, jewelry, etc., and space for the storage of more bulky valuables.

4. *Other Functions.*— The three classes of functions above described are those most commonly exercised, in varying proportions, by the average trust company. Some companies maintain bond or investment departments, for the purchase and sale of high-grade securities. Trust companies in some States formerly transacted fidelity or title insurance business, and a few companies still transact such business; but the tendency, both in legislation and in business practice, is to leave this field to companies organized for this special purpose. In a number of States trust companies transact a real estate agency business. Other functions are sometimes found, the extent of powers

being determined by the laws of the different States.

It should be noted that not all trust companies undertake all of the functions above enumerated. The functions actually performed by corporations bearing the word "trust" in their titles vary widely. There are some trust companies which devote themselves exclusively to trust business; there are many which do no trust business, and are in fact commercial banks, or savings banks, or both commercial and savings banks. Others transact trust and savings business, but no commercial banking business. In several of the Southern States there are "trust companies" whose business consists solely of dealing in real estate or insurance or of a combination of the two. There are also some such companies whose business is that of dealers in real estate mortgages or mortgage bonds.

**Organization, Regulation and Management.**—Trust companies are creatures of State legislation, and are organized under the laws of the State in which they are to be located. Formerly they were chartered in many States only by special act of the legislature and in some States under the general incorporation laws. Most of the States now have general trust company laws, which provide specially for the incorporation, powers, government and regulation of such companies. The general trust company laws in most States contain a number of provisions intended to safeguard the business. The capital stock required is usually much larger than that specified for banks in the same locality, and it is generally required that trust companies apply a portion of earnings each year to the building up of a surplus until it reaches a certain proportion (frequently 20 per cent) of the capital. In many States stockholders are subject to double liability. Restrictions of various kinds are placed on the making of loans and investments and the investments of the trust department are specially restricted. Adequate reserves are required. Practically all of the States stipulate that trust funds must be kept absolutely separate from those of the company and of other departments, and also that securities belonging to specific estates be so marked and recorded as to clearly designate the owner, so that in case of failure of the company the trust funds would not be affected. Many States forbid the transaction of any trust business until the company has made with State authorities a deposit of cash or securities in certain specified amounts as special security for the faithful performance of its fiduciary obligations. Practically all of the States require trust companies to make regular reports to State officials, varying in different States from once to five times each year; and to submit to examination by State officials, usually once or twice each year.

The internal organization of trust companies is quite similar to that of ordinary banks, except that the variety of duties undertaken necessitates the maintenance of separate departments (required by law in many States) for the transaction of trust, savings, general banking, safe deposit and other lines of business. Subject to the State laws, a trust company is governed by by-laws adopted by the stockholders; is under the general direction of a board of directors; and is administered by a group of officers whose number and duties are determined by the needs of the business.

In addition to the character of its business in the trust department, the typical trust company differs from an ordinary commercial bank in the character of the deposits which it attracts and in the resulting methods in which it invests the funds received in such deposits. The typical commercial bank handles demand deposit accounts of active business concerns whose funds are in constant use and whose balances fluctuate radically from day to day or week to week. Such a bank must therefore invest its funds in short-time loans so maturing that it will always have ample funds available with which to meet the demands of its depositors, and will be able to reduce the amount of its outstanding loans on short notice. On the other hand, the typical trust company does not handle deposits of active business concerns. Its deposits are composed of inactive funds, of gradually accumulating savings or of funds set aside for a considerable period for special purposes, the balances of which, as a whole, do not fluctuate greatly, and normally tend to steady increase. These are "time deposits" rather than "demand deposits." The trust company, therefore, need not confine its investments to short-time loans, but may place its funds in long-time loans and in certain approved classes of securities,—in bonds and in real estate mortgages. Trust funds, as already stated, are kept entirely separate from other funds of the company. Their investment is hedged about with many safeguards required by law, by the by-laws of the company and sometimes by the provisions of the trust.

**Historical and Statistical.**—The first company in the United States granted the power to do a trust business was The Farmers' Fire Insurance and Loan Company (now The Farmers' Loan and Trust Company) of New York city, to which extensive trust powers were granted in 1822. Similar powers were granted to The New York Life Insurance and Trust Company in 1830. Two companies in Philadelphia,—The Pennsylvania Company for Insurance on Lives and Granting Annuities, and The Girard Life Insurance, Annuity and Trust Company (now The Girard Trust Company),—were granted trust powers in 1836. All four are still in existence.

As is indicated by the names of these early companies, the trust business was at first closely associated with the insurance business, and was not regarded as of sufficient importance to require separate organizations. A few other companies of the same kind flourished for a time during the next 20 years, but went out of business for various reasons. The first company in the country organized to transact exclusively a trust business was The United States Trust Company of New York city, incorporated in 1853. The number of companies authorized to exercise trust functions increased slowly down to the time of the Civil War, immediately following which a number of such companies were organized. By 1875 perhaps 50 trust companies were doing business, located in New York, Pennsylvania, New Jersey, Maryland, Illinois, Iowa, Georgia, all the New England States except Maine, and possibly a few other States.

TRUST COMPANY STATISTICS 1875–1915 FROM THE REPORTS OF THE COMPTROLLER OF THE CURRENCY

| YEAR | Number of companies reporting | Total resources | Capital | Surplus and undivided profits | Deposits and due to banks |
|---|---|---|---|---|---|
| 1875 | 35 | $122,890,175 | $21,854,020 | $7,550,560 | $85,147,012 |
| 1880 | 30 | 126,869,673 | 18,501,876 | 10,245,051 | 90,158,637 |
| 1900 | 290 | 1,330,160,343 | 126,930,845 | 148,389,339 | 1,031,735,272 |
| 1908 | 842 | 2,855,638,876 | 278,408,759 | 416,039,899 | 2,029,978,992 |
| 1909 | 1079 | 4,068,534,988 | 362,763,223 | 493,382,193 | 3,112,588,489 |
| 1910 | 1091 | 4,216,850,062 | 367,333,556 | 498,166,836 | 3,260,264,582 |
| 1911 | 1251 | 4,665,110,869 | 385,782,933 | 538,870,453 | 3,615,224,149 |
| 1912 | 1410 | 5,107,444,382 | 418,985,772 | 560,741,978 | 3,974,516,696 |
| 1913 | 1515 | 5,123,920,197 | 452,386,839 | 574,369,239 | 3,867,080,459 |
| 1914 | 1564 | 5,489,531,038 | 468,201,249 | 570,407,218 | 4,281,985,258 |
| 1915 | 1664 | 5,873,120,341 | 476,806,240 | 577,393,801 | 4,602,536,060 |

Prior to 1875 no statistics regarding trust companies are available, but in that year the Comptroller of the Currency began the publication of such statistics in his annual reports. As the trust companies are State institutions and not under the jurisdiction of the comptroller he had no authority to compel the rendering of reports by them, and as a consequence his figures represent only such companies as were willing to report to him. Nevertheless they reveal the relative growth of trust companies from year to year, and in recent years represent the great majority of such companies. For the year 1875 he reports 35 trust companies, with total resources of $122,890,175. During the eighties there was a considerable increase in number of companies, and the trust company as an institution began to attract some attention, particularly from the banks, which saw danger of competition. In 1890 the comptroller's reports showed 149 companies with total resources of $503,801,336. The real development of the trust company began along in the nineties, though the period of most rapid growth did not begin until the first decade of the 20th century. In 1900 the comptroller reported 290 companies with total resources of $1,330,160,343, an increase in resources in 10 years of 164 per cent. At the end of the next decade, in 1910, the comptroller's report showed 1,091 companies with total resources of $4,216,850,062, an increase during the decade in number of companies of 801, or 276 per cent, and in resources of $2,886,689,719, or 217 per cent. The 1915 report shows a further great increase, to 1,664 companies with total resources of $5,873,120,341. The table at top of page shows leading figures of the comptroller's reports from 1875 to 1915 inclusive.

Beginning in 1903, The United States Mortgage and Trust Company of New York has published each year a compilation of trust company statistics which include a great majority of the trust companies of the country. For the year 1915 its figures cover reports from 1,777 companies, besides which it lists over 250 companies from which reports were not received. This indicates that the total number of trust companies in the United States 30 June 1915 was in excess of 2,000. The accompanying tables show the total figures for the 1,777 reporting companies, and the distribution of companies by States.

RESOURCES AND LIABILITIES OF TRUST COMPANIES OF THE UNITED STATES, 30 JUNE 1917.

(As reported by The United States Mortgage and Trust Company, New York, 2009 companies reporting).

| | |
|---|---|
| **Resources:** | |
| Stocks and bonds | $2,032,057,479 90 |
| Loans, notes and mortgages | 4,779,179,424 30 |
| Cash on hand and in bank | 1,606,136,907 89 |
| Real estate, banking house, furniture and fixtures, and safe deposit vaults | 250,134,182 12 |
| Other resources | 291,003,843 37 |
| Total | $8,958,511,837 58 |
| **Liabilities:** | |
| Capital | $567,885,547 83 |
| Surplus and undivided profits | 682,519,108 29 |
| Deposits | 7,362,830,982 36 |
| Other liabilities | 345,276,199 10 |
| Total | $8,958,511,837 58 |

DISTRIBUTION OF TRUST COMPANIES BY STATES 30 JUNE 1917 *

| STATE | No. of companies reporting | Total assets |
|---|---|---|
| Alabama | 32 | $26,901,074 40 |
| Arizona | 10 | 12,504,031 54 |
| Arkansas | 40 | 29,019,855 25 |
| California | 31 | 410,194,270 88 |
| Colorado | 20 | 47,167,271 16 |
| Connecticut | 61 | 126,168,891 51 |
| Delaware | 18 | 34,791,128 48 |
| District of Columbia | 6 | 54,380,105 55 |
| Florida | 14 | 13,352,595 69 |
| Georgia | 22 | 38,748,849 32 |
| Idaho | 11 | 10,058,774 23 |
| Illinois | 67 | 848,198,899 12 |
| Indiana | 151 | 150,140,480 63 |
| Iowa | 88 | 59,284,857 96 |
| Kansas | 10 | 5,481,235 44 |
| Kentucky | 56 | 48,283,403 28 |
| Louisiana | 34 | 121,984,757 03 |
| Maine | 47 | 102,156,238 87 |
| Maryland | 23 | 123,720,735 77 |
| Massachusetts | 92 | 601,809,945 06 |
| Michigan | 9 | 35,355,673 09 |
| Minnesota | 15 | 18,508,130 85 |
| Mississippi | 19 | 16,269,653 74 |
| Missouri | 69 | 182,006,734 40 |
| Montana | 15 | 33,150,385 29 |
| Nebraska | 16 | 4,944,501 00 |
| Nevada | 3 | 4,106,543 82 |
| New Hampshire | 12 | 17,421,577 86 |
| New Jersey | 114 | 399,905,186 91 |
| New Mexico | 11 | 4,864,828 22 |
| New York | 95 | 3,009,970,109 98 |
| North Carolina | 61 | 49,028,135 02 |
| North Dakota | 4 | 1,167,211 57 |
| Ohio | 87 | 551,696,005 79 |
| Oklahoma | 9 | 2,423,747 80 |
| Oregon | 6 | 5,425,602 74 |
| Pennsylvania | 293 | 1,219,841,405 19 |
| Rhode Island | 13 | 174,069,037 34 |
| South Carolina | 19 | 7,433,874 97 |
| South Dakota | 11 | 5,115,749 40 |
| Tennessee | 70 | 65,488,237 60 |
| Texas | 68 | 73,177,490 21 |
| Utah | 9 | 19,989,295 90 |
| Vermont | 36 | 57,314,227 39 |
| Virginia | 25 | 29,100,107 40 |
| Washington | 29 | 49,647,220 94 |
| West Virginia | 23 | 36,270,727 53 |
| Wisconsin | 14 | 14,098,651 99 |
| Wyoming | 8 | 2,675,400 61 |
| Hawaii | 5 | 3,698,981 86 |
| Totals | 2009 | $8,958,511,837 58 |

* Compiled from "Trust Companies of the United States, 1917," published by the United States Mortgage and Trust Company, New York.

**The Federal Reserve Act.**— The Federal Reserve Act, as construed by the Federal Reserve Board, directly affects trust companies in two ways: it makes trust companies eligible to membership in the Federal Reserve banks, and it permits National bank members of the Federal Reserve system,— if in conformity with local State laws — to undertake certain trust functions. Up to the present time few trust companies have joined the Federal Reserve system, largely because that system is designed wholly for commercial banks. Authority to National bank members to exercise trust functions applies only to those members which are located in States whose laws permit them to exercise such functions. Some of the States grant that permission, while others have distinctly refused to do so. If the exercise of trust functions by member banks of the Federal Reserve system becomes general, the fact will doubtless have a marked effect upon the growth of trust companies as separate institutions.

CLAY HERRICK,
*Author of 'Trust Companies.'*

**22. BANKERS' ASSOCIATIONS IN THE UNITED STATES. American Bankers' Association.**— Prior to 1875 there was no national organization of American bankers. In that year the American Bankers' Association was organized at a convention held in Saratoga on 20, 21 and 22 July. By 1916 the Association had become the largest organization of bankers in the world, with headquarters at 5 Nassau street, New York. Its membership of 16,000 includes half the total number of banks in the country, and comprises National, State and private banks, trust companies and clearing houses. Annual dues range from $10 to $75 for banks and trust companies according to capital and surplus invested.

The governing body of the Association is the convention, which meets annually. Administrative details are in charge of a general secretary and an executive council composed of members appointed from State bankers' associations on the basis of State representation.

In 1894 the Association began the protection of members against crime and fraud, and developed a protective department which works with the W. J. Burns International Detective Agency in the pursuit of offenders against banks. Through its general counsel and a Federal legislative committee, the Association has initiated and promoted laws relating to uniform bills of lading, negotiable instruments, credit practice, currency reform, taxation, the safeguarding of bank depositors and the improving of banking practice.

The interests of special classes of member banks are in charge of secretaries of a Savings Bank Section, a Trust Company Section, a National Bank Section and a Clearing House Section. Through these sections the Association has made efforts to standardize banking practice and check collection; has conducted a national thrift campaign; given publicity to the functions of trust companies; collected statistics of bank transactions; developed country clearing-house organizations; improved clearing-house examinations, and effected closer relations between the banks and the public. It has also compiled a cipher code; copyrighted standard forms of fidelity and bank burglary bonds; devised a numerical system to facilitate check collection, and perfected the A. B. A travelers' check.

Affiliated with the American Bankers' Association is the American Institute of Banking, an educational section which, since 1890, has given instruction to bank employees. Courses of study in banking law and practice and in elementary economics are given by correspondence as well as in local chapters. The members of the Institute number more than 16,000 and its certificate has become the recognized standard of American banking education.

The Association maintains a reference and traveling library service for its members, and keeps records of American experience in money and banking. A monthly publication called the *Journal-Bulletin* is issued by a department of public relations, which also acts as a bureau of publicity and edits the printed proceedings of the Association's annual convention.

The Association has always been active in urging currency reform. Since 1906 its efforts in that direction have been expressed through a currency commission, which has worked with other agencies in bringing about and developing the Federal Reserve system. The Association has also done much for the national development of agriculture through its currency commission, which publishes a monthly magazine called the *Banker-Farmer*. Points of contact with State bankers' associations are maintained through a section known as the Organization of State Secretaries, and through joint efforts in agricultural extension, the revision of banking legislation, the apprehension of bank criminals, and through co-operation between committees.

**State Bankers' Associations.**— There are 49 State bankers' association, including the District of Columbia. The first to organize was Texas, in 1885; while Illinois, with a membership of 1,755, is the largest. These State organizations have more than 21,000 members, and most of them maintain paid secretaries to further the interests of members through correspondence, protective features, bond and burglary insurance, group meetings, State conventions, legislation and the publication of monthly bulletins. Many associations also have paid attorneys, and most of them are active in agricultural and good roads' development.

**The Investment Bankers' Association.**— The Investment Bankers' Association of America was organized in New York in 1912, "in order to promote the general welfare and influence of investment banks, or bankers, likewise banking institutions operating bond departments, and to secure uniformity of action, both in legislation and methods of handling securities." "Any national or state bank, trust company or private banker, banking firm or corporation, in good standing, having a paid-in capital of $50,000 or more, which makes a practice of buying bonds or investment stocks, and publicly offers the same, as dealers therein" is eligible to membership, but "those who are exclusively brokers" are not admitted.

The Association has headquarters at 111 West Monroe street, Chicago. A *Bulletin* of information is published frequently and the proceedings of the annual convention are

printed. The associated activities of nearly 500 members are carried on through a board of governors which meets quarterly, through a secretary, a legal counsel and committees. The Association is prominent in legislation relating to the issuance, standardization and safeguarding of securities and the improvement of the ethics of stock and bond trading. It has given special attention to raising the status of municipal and other bonds, and to reforms in methods of taxation.

**Farm Mortgage Bankers' Association.**—In May 1914 the Farm Mortgage Bankers' Association of America was organized. It has a membership of more than 150 farm mortgage firms operating in 25 agricultural States, representing outstanding farm mortgages of more than $600,000,000. The offices of its secretary-treasurer are at 112 West Adams street, Chicago, where a quarterly *Bulletin* is published. Its convention is held annually. Through a board of governors, committees and the secretary-treasurer, the organization is directing special efforts toward the standardization of mortgage forms and uniformity of practice among farm mortgage dealers.

**Other Bankers' Associations.**—New York State, Massachusetts and Connecticut have savings bank associations, while New York, New Jersey and Massachusetts have State-wide trust company associations. In Oklahoma and Kansas the State banks have separate organizations. Bank examiners are organized into what is known as the National Association of the Supervisors of State Banks; there is an Association of Reserve City Bankers; bank credit men are organized into a Robert Morris Club; and there are numerous local associations of related banking interests, as well as clubs of city bankers. The Bankers' Club of America has headquarters in the Equitable building in New York city and limits its resident membership to 1,500.

MARIAN R. GLENN.

**BANNATYNE CLUB,** instituted by Sir Walter Scott in 1823. Its object was to print and publish in a uniform manner rare works of Scottish history, topography, poetry, etc.

**BANNEKER, Benjamin,** American negro mathematician: b. Maryland, 9 Nov. 1731; d. 1806. At the age of 50 he began the study of mathematics for astronomical purposes. He published annually after 1792 an almanac devised by himself, and aided in determining the boundaries of the District of Columbia.

**BANNERET,** an abbreviation of knight banneret; a member of an ancient order of knighthood which had the privilege of leading their retainers to battle under their own flag. A banneret was entitled to display a banner instead of a pennon. They ranked as the next order below the Knights of the Garter, only a few official dignitaries intervening. This was not, however, unless they were created by the King on the field of battle, else they ranked after baronets. The order is now extinct, the last banneret (John Smith) created having been at the battle of Edgehill, in 1642, for gallantry in rescuing the standard of Charles I.

**BANNOCK,** a cake once much eaten in Scotland. It was made of oatmeal, barley-meal or peasemeal baked on an iron plate or griddle over the fire. From a supposed resemblance the turbot is sometimes called in Scotland the bannock-fluke.

**BANNOCK.** See BANAK.

**BANNOCKBURN,** Scotland, village about two and one-half miles southeast of Stirling, on Bannock Rivulet. Here on 24 June 1314 Robert Bruce, with 40,000 Scotch, inflicted a great defeat on Edward II at the head of 60,000 English troops. The victory was in large measure due to the clever device of Bruce who had caused the ground in front of his position to be undermined in all directions. The English cavalry stumbled onto the hidden pits, were rendered helpless and the army was thrown into confusion. The English are said by historians to have lost 10,000 to 4,000 of the Scotch. By this victory Bruce made his throne secure and also assured the independence of Scotland. See SCOTLAND — HISTORY.

**BANNS,** the announcement of intended marriage, requiring the hearers to make known any cause why the parties should not be united in matrimony. By the publication of these banns is meant the legal proclamation or notification within the parish, district or chapelry, of the names and descriptions of the persons who intend to be there married; the object being to secure public knowledge of intended marriages, and that all who have objections to the marriage may be enabled to state them in time. If the bridegroom live in a different parish from the bride, the banns must be proclaimed also in that parish, and a certificate of such proclamation must be produced before the celebration of the marriage. According to the old English canon law, the publication of banns might be made on holidays; but a change was made to Sundays by Lord Hardwicke's Marriage Act in 1753, and although that act was afterward superseded by the 4 Geo. IV chap. 76, the regulation as to Sundays has been since continued. Seven days' notice at least must be given to the clergyman before publication of banns. Banns were customary in various places before they were prescribed by the entire Church in the Fourth Council of Lateran. The Council of Trent ordered pastors to publish them at the principal mass in the parish church, or churches, of the parties, on three successive Sundays or festivals. This publication should be made within two months preceding the marriage. For grave reasons the bishop can dispense from this obligation. By the English Prayer Book the announcement is required to be made in the words of the rubric on each of the three Sundays preceding the ceremony. If objections are offered by anyone present, the clergyman cannot proceed further. Except in the Roman Catholic Church the custom of thus publishing the banns of marriage is practically obsolete in the United States.

**BANQUETS.** It was the famous Mr. Boswell who first defined man as a cooking animal, and yet, appropriate as the definition still is, neither mythology nor tradition offer any clue to aid the student in discovering when it was that the human animal first learned to cook. Of course, it is highly improbable that this secret was known to prehistoric man. Instead of knowing how to cook he undoubtedly ate his food raw, washing it down with pure

cold water from the springs and brooks, and many years must have elapsed before he made the surprising discovery that the foods that satisfied his hunger could be vastly improved in taste if subjected to the influence of heat. All this, however, is little more than mere surmise for our only knowledge regarding the customs of eating in vogue during the remote past has been obtained from the relics unearthed by archæology. On walls now ruined and decayed the hand of the ancient painter and sculptor left a record of the customs of his time and from this source the student has been able to gather some little information regarding the gastronomic progress of the human race.

Such records, however valuable they may be in the absence of other facts, are vague and unsatisfactory at best, and so, turning to ancient literature, one finds that the earliest references to food preparation are contained in the Bible. In Genesis, when Abraham bade Sarah make ready three measures of fine meal that he might be prepared to entertain the angel, the student finds his first direct reference to breadstuffs, and, from that time, the Scriptures often make mention of some foods by means of which the reader may obtain a more or less correct idea of the slow stages by which this branch of the human race progressed from its habits of primitive simplicity to the stately banquets of King Solomon and the extravagant feasts of Belshazzar.

As our meagre records show the art of feasting was practically contemporaneous with the Egyptians and the Hebrews it is not improbable that the latter race may have learned the secrets of good living from the former during the time of the captivity, for at the period when both Greek and Roman were still content with the simplest fare the Hebrews had been initiated into the pleasures of the table, a fact which explains the many quaint Biblical warnings against the sin of gluttony, as in Esdras, where it is said that "the faces of them that have used abstinence shall shine above the stars."

Among the ancient Jews all festive repasts were held toward the close of the day, after all matters of business had been concluded. If the feast was to be one of great ceremony guests were not only invited long before the occasion, but again, on the day and as near as possible to the hour appointed, servants were sent to their houses to deliver orally the second, or "express" invitation, which announced that the host was now prepared to receive his guests. As this "express" invitation was sent to none but those who had already declared their acceptance, honor and propriety required that they answer the summons at once and in person, a fact which explains and justifies the feelings of resentment which were entertained by the master of the house in the parable of the great supper, on which occasion, as will be remembered, each person invited met the bearer of the "express" with a frivolous apology for his inability to be present at the feast to which he had already accepted an invitation.

Guests at Hebrew banquets were required to bring their cards of invitation and these were presented to servants stationed at the entrance door. Upon being admitted the guests were conducted to the receiving-room where water, oils and perfumes awaited them. If the host desired to exhibit a great mark of courtesy he provided each guest with a richly embroidered garment, light and showy and cut in a flowing fashion, which all were required to wear during the feast.

If the banquet was of a private character the master of the house presided, but on occasions of public festivity a governor of the feast was selected and it was his duty to see that the banquet was not only properly conducted but that the company present preserved at least a semblance to order. Appointment to this office was always regarded as a great honor, and, among the Greeks and Romans, the position was prized so highly that the choice of the individual to fill it was often decided by chance, as by the throw of the dice.

The positions of the guests at the tables were not fixed by inviolable rule. Sometimes they selected their own places, while, at other times, they were arranged by seniority of family, or even according to the whim of the host who might desire to assign the most distinguished guests to places near his own person. In the earliest days, as is shown by the habits of the ancient Israelites, guests sat cross-legged around a low table and the custom of reclining while eating was not introduced until about the last of the Old Testament days. At least, it was about this time that the Jews adopted this custom, as well as the habit of having but two-thirds of the table spread with a cloth, the portion where the food was to stand being left bare. In ancient Egypt and Persia the tables were arranged along the sides of the room and guests faced the wall.

At this time such articles as spoons, knives and forks were unknown and those who ate obtained the morsel they desired by dipping their slices of bread in the dish before them, folding the piece of meat or other food substance within it by the use of the thumb and two fingers. Later centuries saw the invention of the spoon but many hundred years elapsed before any other substitute for the fingers was suggested. Naturally the hands became besmeared with grease but they were cleaned by being rubbed on slices of bread, kept for that purpose. This bread was then thrown to the dogs who waited beneath the tables for just such morsels from the feast. If the fingers became too badly soiled, however, servants appeared with water and assisted the guests to wash by pouring a stream over the hands into a basin.

When the party was a large one it was the custom for two persons to eat from one dish and the host often showed the height of hospitality by dipping his hand into his own dish, lifting a portion of the food, and offering sop to his guest. To decline such an attention was a breach of etiquette that stamped one as being extremely ill-bred. In order that the hands should be always clean from dirt, however the rabbis enjoined the "first water" and the "last water," or the washing before and after eating, and, in the case of travelers at least, the "first water" included the washing of the feet. After the adoption of the reclining posture guests lay with their faces toward the table, the left arm resting upon a cushion and the feet stretched out behind, while during the progress of the banquet both head and feet were frequently sprinkled with perfume to overcome

any unpleasant odor that might arise from too copious perspiration.

The foods served at these ancient banquets consisted of flesh, fish, fowl, melted butter, bread, honey and fruit, all of which were brought to the table at one time, the service being accomplished by the use of trays, the number and quality of the dishes varying under different circumstances. In ordinary cases the portion of each guest consisted of four or five dishes, but if the guest was a person of great distinction this portion was increased until the dishes became so numerous that they were piled one upon another, completely covering the table. All this food, which was usually prepared in liquid or with a sauce, as in a stew, had been cut into conveniently small pieces before it was served.

From the earliest days within the recollection of history sacrificial occasions have always included a banquet, however crude a festival it may have been, and it was the adoption of this custom that gave a religious as well as a social significance to so many of the Hebrew feasts. As the Lord's Supper of the Christians was derived from the Passover, so all the great religious festivals had, as their accompaniment, a domestic feast. On the occasion of the religious banquets, however, the wine was mixed according to rabbinical regulation, or with three parts water; four brief benedictions being pronounced over the cup before it was passed by the master of the feast.

The Greeks, like the Persians, began and ended their feasts with libations of wine, and some idea of the nature of an ancient Greek banquet may be obtained from the following curious account of a dinner given by Achilles in honor of Ulysses:

He cast down a great fleshing block in the firelight, and laid thereon a sheep's back and a fat goat's and a great hog's chine, rich with fat. And Automedon held them for him while Achilles carved. Then he sliced well the meat, and pierced it through with spits. Then, when the fire was burned down and the flames waned, he scattered the embers and laid the spits thereupon, after he had sprinkled them with holy salt. Then when he had roasted the meat and apportioned it in platters, Patroklos took bread and dealt it forth in fair baskets, and Achilles dealt the meat; and he sate himself over against godlike Odysseus and bade his comrade Patroklos to sacrifice to the gods, so he cast the first fruits into the fire. Then they put their hands to the good cheer lying before them.

Later, of course, the Greeks became more delicate eaters and vied with the Romans as to the elaborate character of their feasts. Like the Egyptians and Hebrews they reclined at table and their sumptuous repasts were divided into two courses: the first consisting of fish and meat, accompanied by the vegetables and several hors d'œuvres or entrees, while the second course comprised the pastry, fruits and other kinds of dessert.

As soon as the regular meal was finished the tables were removed and the floor was cleaned of all fragments. Other tables were then brought in by the servants, tables covered with salted cakes, cheeses and other foods provocative of thirst, as well as the great mixing bowls, the pitchers of water cooled in snow, and the jugs of unmixed wine, for the Greeks loved to drink heavily after eating, and as they drank, to an accompaniment of music, song and dances, young and handsome slaves garlanded their heads and breasts with twining vines and flowers, not, as has sometimes been said, as a sign of festivity, but because the garlands were supposed to cool the forehead and counteract the heady effect of the wines.

Like the Hebrews the Greeks obtained their first lessons in cookery from the Egyptians and they soon put them to good account. The Athenians were particularly apt pupils in the kitchen science and they finally came to excel the rest of Greece in gastronomic achievements just as the modern French excel the rest of Europe in this day. An excellent proof of this assertion is to be found in the circumstance that what is regarded as one of the most valuable of the lost works of antiquity is a didactic poem on gastronomy, written by Archestratus, the intimate friend of one of the sons of Pericles. "This great writer," says Athenæus, "has traversed earth and sea to render himself acquainted with the best things which they produced. He did not, during his travels, inquire concerning the manners of nations, as to which it is useless to inform ourselves, since it is impossible to change them; but he entered the laboratories where the delicacies of the table were prepared, and he held intercourse with none but those who could advance his pleasure. His poem is a treasure of science, every verse is a precept."

Among the great nations of ancient times the Romans were the last to learn the art of cookery. As late as the year 174 B.C. there were neither cooks nor public bakers in Rome, and the people were satisfied with and asked for nothing better than a kind of porridge made of pulse. This in addition to their vegetables and some leguminous fruits formed their principal articles of diet. The Asiatic wars, however, introduced the Romans to the luxuries of the table and, in a day as it were, Rome, discovering that it had a palate, went mad on the subject of gastronomy. Slaves who could cook, bake or make sweets were brought to Rome in large numbers but, as every man of wealth was eager to purchase them, they brought the highest of prices.

As this was the dawning of the day of Rome's expansion it was not long before her agents began to supply her capital with dainties from all parts of the world. From the far East to the far West whatever seemed delicate of taste or that might help to tempt a nation of palates already craving a new flavor was brought to the cooks in the Roman kitchens. To improve the quality of his cuisine the Emperor Vitellius, one of the most enormous eaters the world has ever known, sent his legions to every part of the empire to shoot game for him, while entire fleets were employed in doing nothing but catching the fish that were to grace his table. In fact it seemed as if Rome, so long satisfied with the humblest of fare, could not find a sufficient variety of foods to gratify its desire for novelty.

Even as early as Cæsar's time, however, the Roman table was liberally provided with a variety of foods sufficient to satisfy almost any appetite. As an example of a feast given in those days one may take the following menu which was served at a pontifical banquet long before the advent of the golden days of Imperial Rome:

The first course, which was intended to merely whet the appetite, consisted of conger eels, oysters, two kinds of mussels, thrushes

served on asparagus, fat fowls, a ragout of oysters and other shell fish, with black and white marrons. The second course included a variety of shell fish and other marine animals, becaficos, haunches of venison, a wild boar and a pasty of becaficos and other birds. The third, and principal course, comprised the udder of swine, boar's head, a fricassee of fish, a fricassee of sow's udder, ducks of various kinds, roast fowl, with pastry and Picentine bread.

As the years passed Rome experienced no deterioration in its love for the good things of the table. In fact, on the other hand, this pontifical menu was really a meagre bill of fare as compared to those which were afterward prepared by the Roman cooks for the delectation of the later Cæsars. As an illustration the following description of a banquet in the time of Nero, which is taken from Dean Farrar's 'Darkness and Dawn,' is admitted by students to be a vivid but not exaggerated picture of a feast in the days of Imperial Rome. At this banquet, which was prepared under the directions of Otho, Nero entertained eight guests. The walls of the room "were inlaid with mother-of-pearl and slabs of ivory. . . . The table was of cedar-wood, and it sparkled with goblets of gold and silver . . . among which were scattered amber cups. . . . Although it was winter, garlands of exotic roses were provided for every guest, and none but the most youthful and beautiful of Otho's slaves were permitted to wait upon them. The supper was no supper of Trimalchio, with its coarse and heavy gluttonies. . . . The oysters were from Richborough; the lampreys were from the fishponds of a senator who was said to have flung into them more than one slave who had offended him; the mullet came from Tauromenos; the milk cheese from Carsina. There were two tiny dishes which represented the last and most extravagant devices of Roman gourmets, the one composed of the tongues of nightingales, the other of the brains of Samian peacocks and African flamingoes, of which the iridescent and crimson feathers adorned the silver plates on which they lay. Sea and land had been swept with mad prodigality to furnish every luxury. The wines were of the rarest vintages, and whereas four kinds of wine were thought extravagant in the days of Julius Cæsar, Otho set 80 different sorts before his guests. . . . Hot mushrooms alternated with bits of ice." Perfumes were sprinkled on the hair and feet of the guests, and the amusements that were provided were dancing by Andalusian girls, dice and gambling. Offerings to the gods were not forgotten, however, and these were thrown into the hearth.

If this was a dainty repast, however, Rome was not always so dainty for the wealthy gourmands were not satisfied with eating well. They wanted to gluttonize, to eat of everything immoderately until they found it impossible to eat any more, when, by resorting to the ever-convenient feather, they were able to return to the feast and stuff themselves once more to repletion. On such occasions the more distinguished the company, the earlier began the banquet and the later it lasted.

Nor did the Roman table ever go dry for the want of rare and choice wines. In Greece the juice of the grape was almost invariably mixed with water, but Rome wanted no dilution of its revelling. Wildly extravagant and prodigal in everything, the Romans made no exception in the case of their drink. The wines that they used were preserved in jars or bottles of baked clay, and, as they were prized in proportion to their age, each receptacle bore a label on which it was distinctly stated in what consulship the beverage had been made. Many of these wines came from Italy, the Campania being considered the best, but the wines of Greece were also there, side by side with all the drinks that time or money could gather from every part of the world.

The fact that civilization and cookery go hand in hand was never more strikingly illustrated than in the case of the ancient Britons, for, in the earlier days of their history their cuisine was marked by all the limitations of primitive simplicity. The Roman conquest, however, appears to have applied to the kitchens of the country as thoroughly as to the government, for as the Roman conquerors were unwilling to eat the crude culinary preparations of the native Briton they proceeded to teach the conquered how to cook for them. Then, too, at about the same time, the appearance of the German immigrants, with their own more wholesome cookery, was not without its good effect, and the transformation in Mme. Britannica's methods of cooking may be said to have been almost as wise as it was radical.

The centuries which succeeded the fall of the Roman empire, and which comprised the greater part of the Middle Ages, was as dark a period for gastronomy as it was for all other arts. For a time it seemed as if man had forgotten how to cook; as if he had lost his taste for the well-seasoned dishes which had once been his chief delight, and that he had no desire to get it back again. Even Charlemagne, who, according to his Capitularies, took a warm personal interest in his table, was a novice both in the art of cooking and in that of service, for his banquets were barbaric affairs composed of huge roasts of meat dripping from the spit, and other crude features that would have put the ancient Roman gourmets to the blush. Personally, too, the great Emperor of the West was extremely abstemious and seldom, even at dinner, permitted himself to be served with more than four dishes.

The reading of the description of Prince John's banquet in Sir Walter Scott's 'Ivanhoe' certainly gives the impression that the Normans, who appeared two or three centuries later, were justified in priding themselves upon their superior taste and discrimination in matters of eating, but even such flashes of light were but faint illuminations for so black a night for art as that of the dark ages.

Highly as the cuisine is esteemed to-day; idolized as it was before the fall of Rome and Greece called a halt upon civilization and placed a check upon progress, it seems somewhat strange that there was no one chronicler of affairs bright enough to detect the fact that the revival in the lost art of cookery had commenced. As the historians of those days dealt in facts, not in manners, however, it is impossible to state at just what period gastronomy began to be cultivated again, although, of course, it is well known that its revival, like

the revival in learning, was brought about in Italy. According to the best authorities, however, it was the merchant-princes of Florence who made the first attempt to improve the cuisine of the country and their experiments met with such success that their efforts were greeted with the most heartfelt encouragement by travelers from foreign countries who were invited to sit at their tables. It was to the Italian cuisine, in fact, that the French owed their instructions in the gastronomic art, for when Catherine de Medicis returned to Paris she carried several professors of the new cookery in her train. The effect of their importation was almost immediately noticeable. They improved the *pot-au-feu;* they expounded a new theory of taste; they expatiated upon the value of sauces, but, and this was more to the purpose so far as the progress of civilization was concerned, they introduced the art of making ices. Even the 16th century Montaigne, whose life was certainly cast in pleasant places, among the people who composed the best French society, was unable to appreciate the estimate that the Italian cooks of that day had so properly put upon their vocation. In one of his contemporaneous, if not somewhat reminiscent studies, he says:

I have seen amongst us one of those artists who had been in the service of Cardinal Caraffa. He discoursed to me of this science de gueule with a gravity and a magisterial air, as if he were speaking of some weighty point of theology. He expounded to me a difference of appetites: that which one has fasting; that which one has after the second or third course; the methods now of satisfying and then of exciting and piquing it; the police of sauces, first in general, and next in particularising the qualities of the ingredients and their effects; the differences of salads according to their seasons; that which should be warmed, that which should be served cold, with the mode of adorning and embellishing them to make them pleasant to the view. He then entered on the order of the service, full of elevated and important considerations —

" Nec minimo sane discrimine refert
Quo gestu lepores et quo gallina secetur."

And all this expressed in rich and magnificent terms, in those very terms, indeed, which one employs in treating of the government of an empire.— I well remember my man.

The period which intervened between the arrival of Catherine de Medicis from Italy and the accession of Louis XIV is one concerning which there is practically no authentic culinary record, although there is not the slightest reason to doubt that prodigious advances were made by the gastronomic art during that time. In fact, one has but to refer to one of the menus from the table of Louis XIV to realize that cookery had ceased to be an experiment, and it is necessary to go but a step further and compare the foods of Paris in Louis' time with those in use in other parts of the world, to realize the progress that had been made by the French cooks by the middle of the 16th century. In Paris, for example, the foods were not dissimilar to those of our own day, to which the following menu of a dinner which was served to Emperor Charles V, by the city of Halle, would certainly be a contrast:

(1) Raisins in malt flour; (2) fried eggs; (3) pancakes; (4) steamed carrots; (5) fried slices of bread; (6) a covered porridge; (7) a high pasty; (8) a pea-soup with marrow, covered richly with peas and eggs; (9) yellow codfish boiled in butter; (10) carps, boiled; (11) fried fish, with bitter oranges, spiced; (12) sweet pikes; (13) pulverized kernels, with almonds; (14) maize in almonds' milk; (15) fried fish with small olives; (16) cakes; (17) pears and confect.

And during this time England, too, had made some little progress in the improvement of its cuisine, although Henry VIII was one of the first monarchs who exhibited any liberality in rewarding originality in cookery. Henry, however, seemed unable to do enough for those who ministered to the gratification of his appetite, and on one occasion, he was so much delighted with the flavor of a new pudding that he presented a manor to its inventor.

From the early days when the housewives of Briton had adopted a cuisine which may quite properly be termed an amalgamation of German and Roman cookery England had maintained a position of her own in the world of gastronomy. By no means as ostentatious as the ancient disciples of the art; less dainty, perhaps, than the more modern disciples in the various European countries, their school of the kitchen was so largely their own that it is not strange that Cardinal Campeggio, one of the legates charged to treat with Henry VIII concerning his divorce from Catherine, should have been requested to draw up a report on the state of English cookery as compared with that of Italy and France, by the express desire and for the especial use of his Holiness the Pope.

There are certain historical documents connected with the Seymour family still on file in London, which throw a most interesting light upon the culinary customs in vogue in England during the reign of the Eighth Henry. They show, for example, the manner in which he was entertained at Wulfhall on the occasion of his marriage to Jane Seymour. The facts, presented in a paper prepared by the Duchess of Somerset, are as follows:

The king, with his whole household and nobility, arrived at Wulfhall on Saturday, 9 Aug. 1539. They remained Sunday, Monday and Tuesday. How or where so many were lodged does not appear; but "covers," as we should call them, "messes," as the book calls them, were laid for two hundred the first day. There are only two meals a day accounted for, and it appears that on Saturdays, as well as on Fridays, no meat was eaten, abstinence from flesh on those days having been ordered by a Royal proclamation, not only for health and discipline, but for the benefit of the commonwealth and the profit of the fishing-trade. The king's supper on his arrival, therefore, consisted only of fish.

Country places in Wiltshire must have been better supplied with fish than they are now, for the bill of fare included pikes, gills, salmon, tenches, lobsters, bream, plaice, trouts, congers, carps, roach, eels, potted sea-fish and salmon pasties, a sack of oysters, salt haberdine (which was cod-fish salted at Aberdeen), soles, and whitings.

The next day being Sunday, there were messes for four hundred, and the provisions amounted to 6 oxen, 2 muttons, 12 meals, 5 cygnets, 21 great capons, 7 good capons, 10 Kentish capons, 3 doxen and 6 coarse capons, 70 pullets, 91 chickens, 38 quails, 9 mews, 6 grets, 2 shields of brawn, 7 swans, 2 cranes, 2 storks, 3 pheasants, 40 partridges, 2 peachicks, 21 snipe, besides larks and brews — whatever they were.

It is scarcely necessary to trace the history of the banquet — which is, of course, but another name for the history of eating — with more close attention to detail. In contrasting the banquets of other days with those of to-day, however, one is struck by the fact that the modern peoples have also made some considerable improvement in the manner of eating and drinking, for one has but to turn to the menus of meals served at the beginning of the 19th century to find that dinners were not infrequently burdened by 20 or more entrees.

In the last century before the Christian era a stoic, Posidonius of Rhodes, in discussing the methods of cookery, took advantage of the opportunity to preach simplicity. He insisted that man, who had been blessed with good teeth, glands and secretions, a tongue and the usual apparatus for digestion was independent

of the cuisine, and this ancient pagan idea that the object of all repasts should be to take away the desire of eating and to maintain health and vigor has become more acceptable to thoughtful people during the past century. To-day our private banquets at least are simplicity itself when compared with those of even a century ago, and while their somewhat monotonous dearth of any entertainment except that of eating and drinking, with occasional music, has recently resulted in a sort of mania for the odd and eccentric, it is so obvious that these banquents are based upon the old desire for notoriety, the wish to dazzle which has inspired so many of the world's great feasts since the days of King Solomon's entertainment of the Queen of Sheba, that no particular attention is paid to such puerile attempts to provide a novelty.

To obtain a correct idea of the modern banquet, however, the public banquet conceived and executed in the most perfect taste, it is only necessary to recall the dinner given at Compeigne by President Loubet of France in honor of the Tsar and Tsarina of Russia. One of the most magnificent and perfectly appointed affairs of modern times, its 500 covers were served at a cost to the French government of something more than $15,000, exclusive of the wines. And as these were the choicest brands and of the most ancient lineage their cost must have been fully as great as that of the dinner itself.

A story is told that upon this occasion the correspondent of one of the great foreign journals interviewed the chef for the purpose of securing some authentic details concerning the dinner. Among other questions he asked: "And what was the chief novelty of the menu?" Instantly the great man stood upon his dignity and his voice was strong in its wrath as he replied: "Novelties! I would have you know that on the table of the guests of our country we lay no second editions." A reply which might have been made by Vatel, the chef who killed himself, being unable to survive the dishonor of the table for which he was responsible.

In the various descriptions of President Loubet's banquet to the reigning sovereigns of Russia little is said in regard to the decorations or service, the writers confining themselves to the menu, that being the most important feature of the feast. Mention is made, however, that the flags, flowers, ribbons and spun-sugar ornaments united in a decorative scheme with effectively beautiful results.

In regard to the menu, however, it is apparent that it left nothing to be desired. The soups were clear turtle and Creme du Barry, which gave the guests a choice, after which "came a wonderful dish of soft roes called on the bill of fare 'Caisses de laitances Dieppoise,' and another, 'Barbues dorees a la Vatel,' served with a remarkable sauce in which a hundred elements harmonized in a perfect whole. Venison with an acid dressing and braised quail, the most delicate bird of the species, a native of the vineyards of central France, followed the entrees. Afterward, in turn came sherbets, granites, etc., succeeded by truffled pheasants with champagne sauce, salad Potel, named for the chef who invented it and similar delicacies." The triumphal achievement, however, was a savory entremet which is described as a "small pudding of asparagus heads served with a cream sauce." Hot-house fruits, ices, cheese and coffee comprised the final courses of the feast.

One of the exhibits which attracted the most attention at the last Paris Exposition was a service of Sevres which was admittedly the most beautiful and costly production that the famous potteries had ever attempted. Upon each piece of china was pictured a danseuse, but no two were the same in either pose or type of loveliness. Realizing that the one "hobby" of the Tzarina was her love for beautiful china, of which she already had a famous collection, including the best specimens of the work of all the great potteries of the world, it was decided to copy this magnificent service in every detail. It was thus used at the banquet and was afterward presented to the first lady of Russia in the name of President Loubet.

The occasion upon which one nation entertains the rulers of another nation is an event when, if at any time, even the most ostentatious display might be regarded as permissible. If contrasted with the seemly manner of living in vogue among modern diners at ordinary times this banquet of the French President may, in some respects perhaps, have bordered upon ostentation. When compared to the extravagant feasts of other days, however, it seems striking in its simplicity, for nothing could have been in greater contrast to the extravagant luxury of the banquets of the ancients, to say nothing of that of many more modern rulers, that luxury which precedes, if it does not lead to, decadence.

**BANQUETTE,** băn-kĕt', in fortification, the elevation of earth behind a parapet, on which the garrison of a fortress may stand, on the approach of an enemy, in order to fire upon them. Its dimensions vary and it is frequently made double; that is, a second is made still lower.

**BANQUO,** băn'kwō, a famous Scottish thane of the 11th century. In conjunction with Macbeth, cousin of Duncan, the king, he obtained a victory over the Danes, who had landed on the Scottish coast. Macbeth, shortly afterward, violently dethroned Duncan and caused him to be secretly assassinated. Banquo, though not an accomplice, was a witness of the crime; and being subsequently regarded by Macbeth with fear and suspicion, the latter invited him and his son, Fleance, to supper, and hired assassins to attack them on their return home during the darkness of night. Banquo was slain, but the youth made his escape. Shakespeare has interwoven this occurrence with the theme of his tragedy of 'Macbeth.'

**BANSHEE,** an imaginary female being supposed by some of the peasantry in Ireland and the Scottish Highlands to wail or shriek near a house when one of the inmates is about to die.

**BANTAM,** any one of various breeds of diminutive fowls kept for pleasure, and partaking of the characteristics of the several breeds which they imitate in miniature. Thus the game-bantams are miniatures of exhibition game-cocks, and weigh about 22 ounces. The golden and silver Sebright bantams originated in America from a cross between a Polish

fowl and a bantam, and are exceedingly beautiful in plumage. The rose-comb bantams are little copies of Hamburg fowls, and should be either lustrous black or pure white; and the cocks have a rose comb square in front, evenly corrugated, and ending in a spike with a slight upward curve. Booted white bantams are those which have their shanks heavily feathered. The Cochin fowl is imitated in all its varieties by a bantam the cock of which weighs about 28 ounces. Most beautiful of all are the Japanese bantams, of which there are several varieties. The typical one is white with the tail black, and composed of long, sickle-like, white feathers held erect and edged with white. The wing quills are dark slate color edged with white, so that when the wing is folded it shows only white.

**BANTAM,** băn-tăm′, or băn′tam, a province occupying the whole of the west end of the island of Java, and containing a population of about 520,000. It long formed an independent kingdom governed by its own sultan, but at the beginning of the 19th century was formally incorporated by the Dutch with their other possessions. Rice is now the staple product. Its capital, which bears the same name, was once the principal mart of the Dutch, and was surpassed by few towns of the East in antiquity and celebrity. It is now very much decayed. Bantam is believed to give name to the well-known small but spirited breed of domestic fowl.

**BANTAYAN,** Philippines, a town on the island of the same name in the province of Cebu, 62 miles north of the town of Cebu. Numerous shoals make navigation difficult. A leper colony inhabits a small island just off shore. Pop. about 14,000.

**BANTENG,** a wild ox (*Bos sondaicus*) of the mountain forests of the Malay Peninsula and Archipelago (except Sumatra), which greatly resembles the gaur (q.v.), and is by some considered a variety of that animal. These cattle are exceedingly fierce, and are regarded by sportsmen as among the most dangerous of game. Nevertheless they have been tamed, and when crossed with the domestic cattle of the region yield a serviceable hybrid.

**BANTOCK, Granville,** English composer: b. London, 7 Aug. 1868. He was educated in London for the Indian civil service. His love of music caused a change in his plans and he took a preparatory course under Dr. Saunders. In 1889 he entered the Royal Academy of Music, where he was first holder of the Macfarren scholarship. He toured the world in 1894–95 as conductor of the Gaiety Company, conducting in the principal cities of America and Australia, and editing meanwhile *The New Quarterly Musical Review.* In 1896 he joined the G. Edwardes' opera company. His London concerts of 1897 attracted wide attention because he confined himself exclusively to English compositions of recent date. He was appointed municipal director of music at New Brighton, in 1896, where he established a choral society and orchestra. He was principal of the Birmingham Music School from 1900 to 1907, and conductor of the Liverpool Orchestral Association after 1903. He was appointed professor of music in Birmingham University in 1908. He is a prolific composer. His chief works are the operas 'Cædmar' (1892); 'The Pearl of Iran' (1896); an oratorio, 'Christ in the Wilderness' (1907); the symphonic poems, 'Dante' (1902); 'Fifine at the Fair' (1902); 'The Witch of Atlas' (1903); 'Lalla Rookh' (1903); 'Dante and Beatrice' (1911); vocal works with orchestra, 'Wulstan' (1892); 'The Spirit of the Times' (1904); 'Sea-Wanderers' (1905); 'Omar Khayyam' (1907); the choral symphony, 'Atalanta in Calydon' (1912); a string quartet in C minor; serenade for four horns; piano works and songs; and the overtures, 'The Fire Worshippers' (1892); 'Eugene Aram' (1895); 'Saul' (1907); and 'Overture to a Greek Tragedy' (1911).

**BANTRY,** Ireland, a seaport town in county Cork, 56 miles west-southwest of Cork. It consists of four principal streets and a spacious square, but the town generally has a mean appearance. It is a famous summer resort. It is at the head of Bantry Bay, where in 1796 a French fleet anchored and an abortive attempt was made to land. It has a growing trade in agricultural produce, and fishing is carried on to some extent. Pop. about 3,000.

**BANTRY BAY,** a deep inlet of Cork County, Ireland, remarkable both for its beauties and for its natural advantages, although the latter are turned to but little account. It is about 25 miles long and from three to five miles wide, and is safe and commodious for vessels of any size, the water being deep close to both shores, with a few rocks or shoals. A French force tried to land here in 1796. The entrance is guarded by Crow Head on the northwest and by Sheep's Head on the southeast.

**BANTU,** băn′too, or bä-ntoo, the ethnological name of a virile and prolific group of African races dwelling below lat. 6° N., and including the Kaffirs, Zulus, Bechuanas, the tribes of the Loango, Kongo, etc., but not the Hottentots. Their birthplace has not been determined; but they moved south from central Africa by way of the east coast. The tribal organization is by means of paramount and lesser chiefs, the one military and the other industrial. In the one case the chief is absolute ruler; in the other his power is limited and he governs through a council of lesser chiefs and a general assembly of the tribesmen. The system of land tenure is on a communal basis. The tribes occupy settled dwellings; certain articles of dress are worn; and polygamy is recognized. The women perform most of the agricultural labor, and the men are hunters and herdsmen. They are skilful in wood and metal working, weave a coarse cloth from cotton and are capable workers in pottery. Maize is the staple food. The term is also used to denote the homogeneous family of languages spoken in Africa throughout the vast region lying between Kamerun, Zanzibar and the Cape of Good Hope, with the exception of the Hottentot, Bushmen and Pigmy enclaves. Ba-ntu, in almost all of these languages, signifies "the people," and hence is applied to the whole linguistic family. The Bantu family, although divided into hundreds of dialects, is evidently derived from one

mother tongue. Consult Deniker, 'Races of Man' (London 1900).

**BANU,** bä'noo, or băn'noo, or **BANNU,** British India, a district in the Punjab; area 3,868 square miles; pop. over 330,000. It is watered by the Indus, which here, during inundations, becomes a vast body of water many miles wide. Nearly all the inhabitants are Mohammedans. Agriculture thrives, especially in the cultivation of the ordinary cereals, sugar-cane, cotton and various oil seeds.

**BANVILLE,** băn-vęl, **Théodore Faullain de,** French poet and novelist: b. Moulins, 14 March 1823; d. Paris, 13 March 1891. He was the son of a naval officer and went early in life to Paris, where he devoted himself exclusively to literature, contributed to many journals and reviews and lived in close friendship with some of the foremost artists and men of letters of the day. First known as a poet through two volumes entitled 'The Cariatides' (1842) and 'The Stalactites' (1846), he established his reputation with the 'Odes Funambulesques' (1857), a sort of great lyrical parody published under the pseudonym BRACQUEMOND, which immediately found great favor and was followed by 'New Odes Funambulesques' (1869, afterward reprinted as 'Occidentales'); 'Prussian Idyls' (1871); 'Thirty-six Merry Ballads' (1875), etc. As a poet he was one of the most amusing of lyrists, and from his acrobatic feats in different forms of metre has been called "the king of rimes." He has also another side. His swinging metres are reminiscent of the anacreontics of Ronsard. His inspiration, however, is purely verbal. His adoption of old forms of verse, such as the ballads, rondeau and rondel, was followed by Austin Dobson and Andrew Lang. As a prose writer he is favorably known by a number of humorous and highly finished tales and sketches like 'The Poor Mountebanks' (1853); 'The Parisians of Paris' (1866); 'Tales for Women' (1881); 'The Soul of Paris' (1890), etc. Of considerable literary interest is 'My Recollections' (1883). His "Works" were published (8 vols.) 1873–78, and a posthumous volume, 'Diernières poésies.'

**BANYAN,** băn'yăn, or băn-yăn', or **BANIANTREE** (*Ficus Benghalensis*), an East Indian tree of the natural order *Urticaceæ,* noted for the roots which descend from the branches and become accessory trunks, thus permitting the original tree to extend over a wide area. In the Calcutta botanical garden one specimen known to be upward of 100 years old has more than 3,000 small trunks, 230 that vary from two to three and one-half feet in diameter, and a main trunk 13 feet in diameter. Among these trunks 7,000 people could stand. The trees often attain a height of more than 70 feet. The leaves are ovate heart-shaped, five to six inches long; the inconspicuous axillary flowers are succeeded by cherry-like scarlet fruits which are eaten by monkeys. The seeds seldom germinate on the ground, but usually among the leaf bases of palms, the roots descending the palm trunks, embracing and finally killing them. As the banyan ages its original trunk dies and decays, leaving the younger trunks to support the life of the tree. The Hindus ascribe various medicinal virtues to this tree, which they regard as sacred. Its light porous wood, its juice and its fruit have no important economic uses. Its close relative, *Ficus indica,* which does not root from the branches, is sometimes erroneously called the banyan-tree.

**BANYUMAS,** bän-yoo-mäs' (Javanese, "golden water"), Java, a residency and town situated on the south coast of the island. The area of the residency is 2,100 square miles and its population about 1,300,000. The chief culture is rice; but coffee, tea, sugar, indigo, cinnamon and other exotics are produced by *corvée* labor, as enforced by the Dutch in other parts of Java. The town and seat of the residency is on the river Seraio, 22 miles inland It has a considerable trade and contains a population of about 6,500.

**BANYUWANGY,** băn' yoo-wań'gē, Java, the extreme eastern district of the island, noted for its extensive coffee gardens and for the remarkably pure sulphur obtained from the Goonong-Marapi volcanic mountain. This is also the name of the capital of the district, an important seaport and Dutch military post, on the Strait of Bali, about 550 English miles east-southeast from Batavia. It has an extensive trade and an estimated population of 9,000.

**BANZ,** bänts, once one of the richest and most famous of the Benedictine monasteries, on the right bank of the Main, three miles below Lichtenfels, Bavaria. Founded in 1071, and destroyed in the Peasants' War in 1525, it was rebuilt and although plundered again in the Thirty Years' War it gradually became famed for the scientific attainments of its monks. In 1803 it was broken up and its library and collections were divided between the Munich museum and other institutions.

**BAOBAB,** bā'ō-băb (*Adansonia digitata*), a tree belonging to the family *Bombacaceæ,* which was named after the naturalist Adanson. It is also called the monkey-bread tree. The leaves are deep green and are divided into five unequal digitate lanceolate leaflets. This tree is a native of western and northern Africa; it is cultivated in many of the warmer parts of the world. It is one of the largest known trees, its trunk being sometimes not less than 30 feet in diameter. In Adanson's account of Senegal some calculations are made regarding the growth of this tree, founded on the evidence of the annular layers. The height of its trunk by no means corresponds with the thickness which it attains. Thus, according to his calculations, at one year old its diameter is one inch; and its height five inches; at 32 years old it has attained a diameter of two feet, while its height is only 22 feet, and so on; till at 1,000 years old the baobab is 14 feet broad and 58 feet high; and at 5,000 years the growth literally has so outstripped its perpendicular height that the trunk will be 30 feet in diameter and only 73 feet high. The roots, again, are of a most extraordinary length, so that in a tree with a stem 77 feet in girth the main branch or tap-root measures 110 feet in length. It often happens that the profusion of leaves and of drooping boughs almost hide the stem, and the whole forms a hemispherical

mass of verdure 140 to 150 feet in diameter and 60 to 70 feet high. The wood is pale-colored, light and soft, so that in Abyssinia the wild bees perforate it and lodge their honey in the hollow, which honey is considered the best in the country. The negroes on the western coast apply the trunks to a very extraordinary purpose. The tree is liable to be attacked by a fungus which, vegetating in the woody part without changing the color or appearance, destroys life and renders the part so attacked as soft as the pith of trees in general. Such trunks are then hollowed into chambers, and within these are suspended the dead bodies of those to whom are refused the honor of burial. There they become mummies, perfectly dry and well preserved, without further preparation or embalming, and are known by the name of *quiriots*. The baobab is emollient and mucilaginous; the pulverized leaves constitute *lalo*, a favorite article with the natives, which they mix with their daily food to diminish excessive perspiration, and which is even used by Europeans in fevers and diarrhœas. The flowers are large, white and handsome; and in their first expansion bear some resemblance to the white poppy, having snow-white petals and violet-colored stamens. Both flowers and fruit are pendent, and the leaves drop off before the periodical rains come on. The fruit is of an oblong shape, of considerable size, and tastes like gingerbread, with a pleasant acid flavor. The expressed juice, when mixed with sugar, forms a cooling drink much used in putrid fevers; this juice is generally used as a seasoning for corn gruel and other food. The bark furnishes a strong fibre.

**BAOUR-LORMIAN,** bă-oor-lōr-myăn, **Louis Pierre Marie François,** French poet and dramatist: b. Toulouse 1772; d. 1854. He first attracted wide notice through his 'Poems of Ossian' (1801), an extremely clever imitation of Caledonian verse; and afterward won success with a tragedy, 'Omasis, or Joseph in Egypt' (1807). Other works of his are 'Political and Moral Vigils' (1811), in the manner of Young; 'Duranti or The League in the Province' (1828), a historical novel; and 'Legends, Ballads and Fabliaux' (1829). But his best work is probably a poetical translation of the book of Job, completed after he had lost his eyesight.

**BAPAUME,** bă-pōm, France, a town in the department of Pas-de-Calais, 12 miles south of Arras. Here, on 2 and 3 Jan. 1871, took place two fierce struggles between the French army of the north and the Prussian army of observation; the French being defeated with a loss of over 2,000. Bapaume fell into German hands early in the European War, but was reconquered by the British on 17 March 1917, an event that marked the close of the great battle of the Somme, begun in June 1916. The first to enter the recaptured town were the Australian troops, who cleared the streets and houses of the retreating enemies. The town had suffered severely; hardly any of the houses were inhabitable. The civilians had left their homes over a year before. In the great offensive, which began on 21 March 1918, the town again fell to the Germans after very sanguinary fighting.

**BAPHOMET,** the name of a mysterious image which the Knights Templars were charged with worshipping when the order was suppressed by Philip IV of France. It is probably a corruption of Mahomet, and the charge may have arisen from the circumstance that some of the Templars had gone over to the Moslem faith. According to Von Hammer, the word signifies the baptism of *Metis,* or fire, and is connected with Gnostic rites. Consult Hallam's 'Middle Ages.'

**BAPTANODON,** an extinct ichthyosaur or fish-lizard of the Jurassic period. Its remains have been found in the marine Jurassic shales of Wyoming and other Western States, which have hence been called "Baptanodon Beds." It is distinguished from the true ichthyosaurus (q.v.) (found only in the Old World) by the form of the paddle-bones, which are rounded instead of polygonal, and was incorrectly supposed to be toothless, as its name indicates. The skulls are two to three feet long, so that the entire animal probably measured 10 to 15 feet and resembled the ichthyosaurus in proportions and habits.

**BAPTISM** (from the Greek *baptizō,* from *baptizein,* to immerse or dip), the application of water to a person as a sacrament or religious rite. It is generally thought to have been usual with the Jews even before Christ, being administered to proselytes, but was probably nothing more than a ceremony of purification. From this baptism, however, that of John the Baptist differed, because he baptized Jews also as a symbol of the necessity of perfect purification from sin. Christ himself never baptized, but directed his disciples to administer this rite to converts (Matt. xxviii, 19); and baptism, therefore, became a religious ceremony among Christians, taking rank as a sacrament with all sects which acknowledge sacraments.

In the primitive Church the person to be baptized was immersed in a river or in a vessel, with the words which Christ had ordered, and a new name was generally bestowed at this time further to express the change. Sprinkling, or, as it was termed, clinic baptism, was used only in the case of the sick who could not leave their beds. The Greek Church and various Eastern sects retained the custom of immersion; but the Western Church adopted or allowed the mode of baptism by pouring or sprinkling, since continued by most Protestants. This practice can be traced back certainly to the 3d century, before which its existence is disputed. Since the Reformation there have been various Protestant sects, called Baptists, holding that baptism should be administered only by immersion and to those who can make a personal profession of faith.

The Montanists in Africa baptized even the dead, and in Roman Catholic countries the practice of baptizing church bells — a custom of 10th century origin — continues to this day. Being an initiatory rite, baptism is, therefore, administered only once to the same person. The Roman and Greek Catholics consecrate the water of baptism, but Protestants do not. The act of baptism is accompanied only with the formula that the person is baptized in the name of the Father, Son and Holy Ghost; but among most Christians it is preceded by a confession

of faith made by the person to be baptized, if an adult, and by his parents or sponsors if he be a child.

The Roman Catholic form of baptism is far more elaborate than the Protestant. This Church holds that baptism is a sacrament which has the effect to remove in the individual the penal consequences of the sin of Adam, to restore him to a state of supernatural grace, and to give him a right to the beatific vision of God, remitting all actual sins committed by the individual. It also imprints an indelible character, which is both an ornament to the soul and a capacity for receiving the other sacraments. The effect of the sacrament is produced *ex opere operato*; that is, by an act of the Holy Ghost infallibly accompanying the performance of the external rite. Bishops, priests and deacons are the ordinary ministers of baptism, and all others are forbidden to baptize except in case of necessity. Baptism is, however, valid when duly administered by any person, and any one may lawfully baptize in case of necessity. On the part of children and others who have never attained the use of reason no dispositions are required. In order to receive the sacrament validly a person who has the use of reason must know what he is doing and intend to receive baptism. In order to receive the grace of the sacrament he must have faith, and, if he has committed mortal sins, repentance; otherwise the grace of the sacrament remains suspended until he acquires the proper dispositions. Besides sacramental baptism, called *baptismum fluminis*, there are two substitutes which can supply its place, called, in a wide and improper sense, *baptismum sanguinis* and *baptismum flaminis*. The former of these is martyrdom, the second is the desire of baptism, accompanied by faith and perfect contrition or the love of God. These only supply the place of baptism when it cannot be had, and confer sanctifying grace, but not an indelible character. Solemn baptism is accompanied with the application of chrism and holy oil, and several other ceremonies of great antiquity.

**BAPTISM FOR THE DEAD,** a custom mentioned by Saint Paul in 1 Cor. xv, 29. It probably consisted in the vicarious baptism of a living Christian for a catechumen who had died unbaptized, the latter being thereby accounted as baptized. It is doubtful if the custom was ever widely prevalent, and it seems to have soon died out in the Church, although kept alive by Marcionites and other heretics. It was forbidden by the Synod of Hippo (393). It is observed by the Mormons at the present day.

**BAPTISM OF THE DEAD,** a superstitious custom which anciently prevailed among the people of Africa of baptizing the dead. The third council of Carthage (Can. vi) speaks of it as a matter of which ignorant Christians were fond, and forbids "to believe that the dead can be baptized." Gregory Hazianzenus observes that the same superstitious opinion prevailed among some who delayed to be baptized. It is also mentioned by Philastrius as the general error of the Montanists, or Cataphrygians, that they baptized men after death.

**BAPTIST CHURCH OF CHRIST, The,** came into separate existence in Tennessee about the beginning of the 19th century as a reaction against certain features of excessive Calvinism. General redemption and the perseverance of the saints form cardinal articles of their belief; and the washing of feet is by them practised as an ordinance. Congregations of the Baptist Church of Christ are found in Tennessee, their chief stronghold, Arkansas, Alabama, Mississippi, Missouri, North Carolina and Texas. In all there are about 150 churches with a total membership of over 8,000.

**BAPTIST YOUNG PEOPLE'S UNION OF AMERICA,** an association representing many young people's societies connected with the Baptist churches in the United States and Canada, organized June 1891 in Chicago, which place has since been its headquarters. Upon the formation of the Union, as the withdrawal of the Baptist societies was feared by the Christian Endeavor societies, a plan of federation was adopted for the establishment of young people's societies over which no constitution should be required. Conventions are held yearly. Consult Bacon and Northrop, 'Young People's Societies' (New York 1900).

**BAPTISTA, John,** Carmelite poet: b. Mantua 1448; d. 1516. His poetical writings were well known throughout Europe during his lifetime; their correctness of form and choice Latinity caused them to be used as texts in the schools. His greatest poem is 'De Calamitate Temporum' ('On the Evils of the Day'), and is divided into three parts.

**BAPTISTERY,** that part of the church, or a special building in which is administered the sacrament of baptism. In the earliest ages of Christianity the solemn administration of this sacrament was reserved to the bishop, and to the Episcopal church was generally annexed a special building called the baptistery. As the converts to Christianity increased, it became necessary to set aside for the baptismal ceremonies a small space within the main building of the various parish churches. The large baptisteries were generally circular or polygonal in form and were placed close to the cathedral church. Many were noted for their beautiful architectural forms. Northern Italy contains many fine examples, notably at Pisa, Parma, Florence, Cremona, Lucca, Siena, Bologna, Ascoli and elsewhere. Many of these are large buildings capable of holding great throngs of people. About the time of the Renaissance separate baptisteries ceased to be erected, baptismal fonts within the church taking their place.

**BAPTISTINES.** (1) A religious order of women founded in 1744 in Genoa by Baptista Solimani. Their rule enjoined a strict fast throughout the entire year, the chanting of the office at midnight and conversation with friends or relatives restricted to three times during the year. (2) A congregation of secular priests founded in 1755 by Dominic Olivieri and placed under the jurisdiction of the Cardinal Prefect of the Propaganda by Pope Benedict XIV. The congregation ceased to exist at the end of the 18th century.

**BAPTISTS,** the name of a religious body that sprang from the Separatist movement in England. Though there were groups of Anabaptists in England in the 16th century, they

were mostly of Dutch origin and made no permanent impression on the English people. One wing of the English Puritans at length despaired of reforming the Church of England in accordance with their ideas, and decided that it was their duty to come out of that institution and establish a "pure church," i.e., consisting only of the regenerate. These early Separatists grew into the two modern denominations known as Congregationalists and Baptists.

From about 1593, groups of Separatists gathered in and about Gainsborough, in Lincolnshire. About 1606, persecution drove them to Holland. Part of them, who had met at Scrooby manor, went to Leyden, whence many afterward became the Pilgrims of the *Mayflower*, who established the colony of Plymouth in 1621. The Gainsborough group went to Amsterdam with their "teacher," the Rev. John Smyth, who had been a clergyman of the Church of England and a lecturer in Lincoln in 1600. Here Smyth first became acquainted with the theology of Arminius, which he soon adopted, and with the Mennonites, whose rejection of infant baptism seemed to him to be according to Scripture. He gave utterance to his new views in a tract called 'The Character of the Beast' (1609), and 36 adherents joined him in establishing a new church on the principle of baptizing believers only. Smyth baptized himself and then his followers, and on this account he is often called the "Se-Baptist." In 1611 members of this sect returned to London and established a church there; similar churches were formed in other places, and these General Baptists (so called because they believed in a general or universal atonement) increased rapidly. In 1644 their opponents estimated their numbers at 47 churches.

In 1616 a congregation of Separatists was gathered in Southwark, London, by Henry Jacob, a former minister of the Church of England. A peaceable division of this church took place in 1633, a part going out to establish a new church and receiving "a new baptism," which probably meant a baptism on profession of faith. In 1640 a further division occurred, and some of the new group became convinced that baptism should be immersion; so they sent one of their number, Richard Blunt, to Holland, where he was immersed by a Mennonite minister at Rhynsberg, and on his return the members of this church were all immersed. In a few years this became the established practice of all the Baptist churches. In 1644 seven churches issued a "Confession of faith," in which baptism was for the first time defined as "dipping or plunging the body under water." This group of churches became known as Particular Baptists, because they insisted on the Calvinistic doctrine of an atonement for the elect only. This distinction of General and Particular Baptists became less significant with the lapse of time, and ceased altogether with the formal union of the two bodies in 1891. Both groups were one in their advocacy of believers' baptism and soul liberty. The Confession of 1644 was the first public document to assert liberty of conscience for all men, as "the tenderest thing unto all conscientious men, and most dear unto them, and without which all other liberties will not be worth the naming, much less the enjoying." The Revolution, just then beginning, was their opportunity. Baptists were uniformly on the side of Parliament, and several of them rose to high rank in Cromwell's army, while their churches grew rapidly.

It was natural that they should experience their full share of persecution after the Restoration,—long imprisonment, heavy fines and even death rewarded their devotion to civil and religious liberty. One of their preachers, John Bunyan (q.v.), was confined 12 years in Bedford jail for the crime of preaching the gospel, and employed his time in writing the immortal allegory of 'Pilgrim's Progress' (q.v.). The Revolution of 1688, and the adoption of the Toleration Act in the following year, removed from Baptists the worst of their disabilities, but their growth for a time was checked by the influence of Socinianism among the General Baptists and Hyper-Calvinism among the Particular Baptists. Not until the Wesleyan revival of the 18th century awakened all England to new spiritual life and vigor did Baptists rise to their opportunities. A new era in their history is marked by the life and labors of William Carey (q.v.), who led the way in organizing the English Baptist Missionary Society, in 1792, and he became its first missionary to India. This was the beginning of the great modern missionary movement among English-speaking Christians, with all that movement has accomplished for the progress of civilization, as well as of Christianity. One of the converts of the Wesleyan revival, Dan Taylor, established the "New Connexion of General Baptists" on an evangelical basis, and this body soon became strong and influential. English Baptists took a prominent part in the important modern Sunday-school movement. One of their number, William Fox (q.v.), began, in 1783, the first school for teaching the Bible to children, and secured in 1785 the formation of the first "Society for Promoting Sunday-schools." The demand for the Bible promoted by such study caused the formation of the British and Foreign Bible Society (1802), in which a Baptist minister, Rev. Thomas Hughes, was a leader and the first secretary.

The growth of English Baptists went on with rapid acceleration through the 19th century. Some of the best-known preachers of England were of their number—Robert Hall, Charles H. Spurgeon, Alexander Maclaren (qq.v.). The organization of the Baptist Union in 1832 marked a great advance in solidarity, and gradually all the denominational societies have been either absorbed by it or affiliated with it. The Regents Park College (1817) and Spurgeon's Pastor's College (1856) have been followed by other institutions for the training of a ministry for the churches.

The first Baptist church in Wales was formed at Swansea, in 1649, by John Myles, and after the Restoration it emigrated in a body to Massachusetts. Vavasor Powell left the Church of England and became a Baptist about 1655, and aided in establishing some 20 churches in Wales. After the Act of Toleration, Welsh Baptists increased rapidly; an association was formed in 1799, and the Baptist Union of Wales in 1867. The churches are

now more numerous than those or any other denomination save the Wesleyans, and are mostly of the Calvinistic type. In Scotland the beginning of Baptists was still later, the first church having been formed in 1750. Though some preachers of notable power have risen among them, like Archibald McLean and the Haldane brothers, they have never made a considerable impression on the Scotch people.

From the beginning, the Baptist churches of Great Britain have been divided on the question of communion with other churches. Most of the early Calvinistic churches and part of the General Baptists insisted on "close" communion, the restriction of the ordinance to the baptized (immersed). Most of the General Baptists and part of the Calvinistic favored "open" communion, or invitation to the eucharist of all Christian people, whether immersed or not. Many churches followed the "open" communion principle to its logical conclusion and admitted the unbaptized to membership also, thus forming what were known as "mixed" churches. The number of churches adopting the more "liberal" practices has been steadily increasing.

The number of Baptists in Great Britain in the last accessible report (1916) was: England, 1,997 churches, 264,923 members; Wales and Monmouthshire, 940 churches, 124,795 members; Scotland, 151 churches, 21,871 members; besides a few in Ireland, Isle of Man and the Channel Islands, bringing the total to 3,135 churches and 414,925 members.

Baptists in European countries have no historic connection with the Anabaptists of the Reformation period, but began in the 19th century with a mission to France (1832), a church of six members being formed in Paris in 1835. After the Revolution of 1848 there was freedom from persecution and opportunity of growth, and there has been gradual progress, though slow. Before the European War, there were 41 churches, with 1,602 members reported. The lack of a school for the training of a native ministry has been a great bar to the advance of French Baptists.

In Germany, the Baptist churches were the result of the conversion and labors of John Gerhardt Oncken, a native of Oldenburg (1800), who spent some years in England and was a colporter in his native land of the British Continental Society. He came to Baptist views of the Church and its ordinances from independent study of the Scriptures, without knowing that a people existed anywhere who held and practised such principles. Professor Barnas Sears, of the Baptist Theological Seminary at Hamilton, N. Y. (now the theological department of Colgate University), was pursuing studies in Germany; Oncken became aquainted with him and was by him immersed, together with six others, and the first Baptist church of Hamburg was constituted. For some years Baptists were severely persecuted, but gradually were granted toleration, and have rapidly increased, until in 1916 they numbered 232 churches and 44,338 members. They have established missions in the surrounding countries: Austria, Belgium, Bulgaria, Denmark, Russia, Switzerland, which have been very successful. In Russia, especially, the Baptist missions have met with great success among the Stundists (q.v.), a large part of whom have adopted the Baptist principles. Russian Baptists in 1916 numbered 839 churches and 60,295 members. With the granting of complete toleration in that country, there is every reason to expect that their development will prove remarkable. A Triennial Conference formed in 1849 unites the operations of the German churches and their missions (known since 1855 as the German Baptist Union). A theological school was established at Hamburg in 1880, which has given these churches a well-trained ministry, and this fact has had much to do with their progress.

The Baptists of Sweden owe their origin to Gustaf W. Schroeder, a Swedish sailor, baptized at the Mariner's Baptist Church of New York in 1844, and Frederick O. Nilsson, also a converted sailor, baptized in 1847 by Oncken. The first church was so persecuted that most of them emigrated and settled in Minnesota. In 1861 Captain Schroeder built a meeting-house at Gothenburg, and Nilsson became its pastor; both were heavily fined for holding a religious service, but toleration was soon granted and several other churches were formed. In 1857, they organized a Conference, and in 1866 the Bethel Theological Seminary was established at Stockholm. American Baptists assisted in the erection of a new building for this school in 1883, as they also did for the German school at Hamburg. Swedish Baptists were the first Christians to establish Sunday schools, Christian Endeavor Societies and other modern activities in their native land. They have also sent out missions to Norway and Finland, which have been very successful. In Sweden there are now 643 churches with 54,584 members; in Norway 39 churches and 3,588 members; and in Finland 54 churches with 3,179 members.

Baptist missions have been established in other countries: Greece, Spain, Italy. That in Greece was long ago abandoned, and only a mission in Italy by Southern Baptists is conducted at present. That began in 1870 in Rome, where a theological school is maintained, and up to the beginning of the European War flourishing missionary work was maintained in many parts of the kingdom. A strong and intelligent native ministry is rapidly developing, and with the restoration of peace growth should be steady. There are now 46 churches and 1,362 members. Of all European Baptists it is true that their numbers have been constantly depleted by emigration, while membership of churches of the various races in America has been correspondingly increased. The total numeration of the continental Baptists is: 2,098 churches and 202,682 members.

The first Baptist churches in Canada were the result either of emigration thither from the American colonies, or of missionary labors by American missionaries. From 1798 the formation of churches proceeded in both upper and lower Canada. At an even earlier date, Baptists were found in Nova Scotia, and the church at Horton was organized in 1778. A group of churches in the Ottawa Association were composed mainly of Scotch immigrants and among them were converts of the Haldanes. Since 1846 the Baptist Convention of the Maritime Provinces has directed the activities of the churches of Nova Scotia, New Brunswick and Prince Edward's Island; and

in 1888 various former societies were consolidated into the Baptist Convention of Ontario and Quebec. They maintain home and foreign missions and support their educational institutions. Of these the most important are McMaster University, at Toronto, founded in 1880, and Acadia College, at Wolfville, N. S. In the great Western provinces of the Dominion, Canadian Baptists are discovering a fruitful field for their cultivation. They now number: churches, 1,325; members, 137,922.

A Baptist church was organized in Sydney, N. S. W., in 1834, and since that time the work has extended to the principal towns of Australia, and to the adjacent colonies of England, Tasmania and New Zealand. Besides the work among the white people, a mission is maintained among the Maoris. In the seven Australasian states there are now 344 Baptist churches, with 30,168 members. In other English colonies, the institutions of religion have uniformly followed the flag and sometimes preceded it. A church was formed in south Africa in 1820, which was the precursor of very fruitful labors, so that now there are 131 churches and 18,924 members. A Baptist church was established at Kingston in Jamaica, in 1816, and now in the West Indies there are 379 churches and 53,680 members.

**Baptists in the United States.**— 1. *Before the formation of the General Convention.*— Among the early settlers of the American colonies were some who were called "Anabaptists," but the first attempt to organize a church was made in the colony of Rhode Island, soon after its foundation (1638). Roger Williams (q.v.), an English Puritan, educated at the University of Cambridge, came to Massachusetts Bay in 1631 and was soon called to be minister of the church at Salem. He taught several things that were regarded as heresies, and was condemned by the General Court, 8 Oct. 1635, to be deported to England, chiefly because he denied the authority of the civil magistrate to punish other than civil offenses. He fled from the jurisdiction of the court, purchased some land from the Narragansett Indians and established the colony of Rhode Island, those who settled with him making a compact to obey the laws duly enacted "only in civil things." This was the first government in the world to be established on the basis of absolute religious liberty. Williams was joined by some of his Salem church, and from their study of the Scriptures they decided that baptism of infants is unwarranted. Williams was baptized by one of the number, Ezekiel Holliman, and then baptized the others, thus constituting a church of 12 members (March 1639). It is not quite certain how the baptism was administered, but there is no record of a later change from affusion to immersion.

At about the same time a colony was begun at Newport, the leader of which was John Clarke, an English physician of Puritan tendencies. The church formed by them soon became, if it was not from the first, a Baptist church (the traditional date is 1644, but the early records have perished). A Welsh Baptist church emigrated in a body in 1663, and settled first at Rehoboth, then at Swansea. The Puritans looked with little favor on any others who came into their colony, and persecutions of the Baptists were frequent and severe. John Clarke and Obadiah Holmes came from the Newport church and held a religious service in a private house at Lynn, for which they were sentenced to pay a heavy fine or be "well whipped." A friend paid Clarke's fine, but Holmes was whipped in the streets of Boston, 6 Sept. 1651. A Baptist church was formed in Boston in 1665, and its first minister, Thomas Goold, was several times imprisoned and treated with such severity that his health was undermined and he died in 1675. Other members of this church were likewise treated, and when, in 1678, a small meeting-house was built, by order of the General Court the doors were nailed up. A church formed in Kittery, Me., then part of the Massachusetts colony, was so harassed that they removed in a body (17 members) to Charleston, S. C., where they established the first Baptist church in the South. Persecution continued until the charter of 1691, which granted "liberty of conscience to all Christians except Papists." Churches were gradually formed in the other New England colonies, but at the beginning of the Great Awakening (1740) there were but eight churches in Massachusetts, and hardly as many more in the rest of New England.

Another group of Baptist churches gathered about Philadelphia, the first being formed in 1688 at Pennepek (now within the city limits), while at the same time another church was organized at Middletown, N. J. Within the next decade a number of churches were established in New Jersey and about Philadelphia, which soon came into fraternal relations and held "general meetings" with each church in turn. Out of this custom grew the first Association (1707), a delegated body having no legislative or judicial authority over churches or ministers, but having in its care their common interests and conducting their missionary and benevolent work. As Baptist churches became more numerous other associations were formed, but the Philadelphia was long the leading body and is still one of the most influential. The issue of a Confession of Faith in 1742, in the main a readoption of the English Confession of 1688 (which was essentially the Westminster), determined the theological trend of American Baptists toward Calvinism, rather than Arminianism.

The Baptist churches fully participated in the spiritual results of the Great Awakening (q.v.), and in all the colonies they made rapid advance. In Massachusetts, for example, the number of churches grew in 40 years from 8 to 73, and of members from 200 to over 3,000. In the whole of New England, the increase was tenfold, and even more rapid growth was made in the South Atlantic States. Severe persecutions in Virginia did little to retard this advance, and after the Revolution progress was greatly accelerated. From this time punitive laws were repealed in all the States, and gradually all forms of religious belief were placed on an equal legal footing. The principle of entire religious liberty, first embodied in law in the colony of Rhode Island, became the accepted principle of the Federal Constitution and was adopted soon in the various State Constitutions. This principle had been advocated consistently by English Baptists from their beginning, and its incorporation into the fundamental law of the United States has been

followed by practically every American country and is to-day recognized by European jurists and statesmen as the most important contribution of modern times to political philosophy and the science of government. In 1906 France became the first European nation to adopt the same principle.

The settlement of the West after the Revolution offered a great opportunity to the Baptists. The churches and associations of the older communities sent traveling preachers as missionaries among the new settlements. Baptist churches were in many cases the first to be formed in the new States, and in all cases among the first. There are no trustworthy statistics, but an estimate generally accepted is that in 1800 there were 48 associations and 1,200 Baptist churches in all the States, with 100,000 members. The growth of Baptists during this early period far outstripped that of the population.

2. *From the Foundation of the General Convention to the Division of the Denomination.* — Up to this time the Baptist churches had little cohesion and no common enterprises. They were now led to unite in the work of foreign missions. In 1810 the American Board of Commissioners for Foreign Missions had been formed, mainly by the Congregational churches of Massachusetts, and had sent several missionaries to India, among them Adoniram Judson (q.v.) and his wife and Luther Rice. From study of the Scriptures they became convinced that only believers should be baptized, and that the apostolic baptism was immersion. So on their arrival at Calcutta they sought out English Baptist missionaries and were immersed. This involved severance of their relations with the Board that had sent them out; so the English Baptists assumed temporary support of the Judsons, and Luther Rice returned to interest American Baptists in this missionary enterprise. He quickly found churches in and about Boston to undertake the support of the Judsons; and then undertook a tour of the country and the enlistment in foreign missions of all Baptist churches. His labors were so extensive and successful that a convention of delegates representing Baptists of all States met at Philadelphia in May 1814 and formed the General Convention of the Baptist Denomination in the United States for Foreign Missions. For a time the convention carried on home missions also, but in 1832 a separate American Baptist Home Mission Society (q.v.) was formed. A Tract Society begun at Washington in 1824 was later removed to Philadelphia and grew into the American Baptist Publication Society. These three national societies became the great bond of unity between the churches — the only bond of unity possible under the congregational polity of Baptists, which insists on the independence of each church in its own affairs — by promoting co-operation in a common work. More than any other assignable cause, this explains the remarkable growth of Baptists during the next three or four decades.

Next to this, the activity of Baptists in Sunday-school work is the key to their progress. The Sunday schools of Robert Raikes (q.v.) were secular schools; the first real Sunday school, with the Bible as the textbook, was that of William Fox. In 1797 the Second Baptist Church of Baltimore began such a school and after 1800 Sunday schools increased rapidly. The progress of missions and Sunday schools caused a great demand for the Bible, both in the English version and in translations made by missionaries. This led to local societies for the circulation of the Scriptures, and at length to a national organization, the American Bible Society, formed in 1816 by representatives of evangelical denominations. The refusal by the Society to print versions made by Baptist missionaries caused the holding of a convention in Philadelphia in 1837 and the forming of the American and Foreign Bible Society. A controversy in this body about the translation of the Bible into English was the origin of the American Bible Union, in 1850.

The unanimity of Baptists in these new enterprises was soon impaired. Violent opposition was made to the Sunday schools, missionary and Bible societies, and even to the Convention, as unscriptural. Deeper still, as a cause of disunion, was the drift of the majority of the churches away from the older extreme Calvinism, to which the minority remained attached. The result of agitation of these questions was division of the churches, a comparatively small minority withdrawing from co-operation with the others and forming the body since known by the various names of Old School, Primitive or "Hard Shell" Baptists. The churches of this order have shown little capacity of growth in the North, and many of them have become extinct; but they are numerous and even flourishing in some Southern States, especially in the mountainous parts of Tennessee and Georgia. There was another large secession of Baptists in the South and Southwest as a result of the movement led by Alexander Campbell and others, from 1815 to 1835, resulting in the establishment of the Disciples of Christ (q.v.). This did not seriously affect the Baptists of the Middle and New England States, but they suffered almost equally from the agitation known as the Millerite movement, which was the origin of the Adventists (q.v.).

In spite of all hindrances Baptists increased notably in numbers in the period we are considering. They participated in the great revivals that characterized these years. At the beginning of the century, being one in 14 of the population, they came by 1845 to be one in six, having increased in members from 100,000 to 686,807, and in churches from 1,200 to 8,406.

3. *From the Division in 1845 to the Formation of the Northern Baptist Convention, 1907.* — The controversy regarding slavery effected schisms in nearly every religious body of the United States. From 1825 onward this became a subject of bitter debate everywhere, and could not be kept out of the meetings of religious societies, inasmuch as it was at bottom an ethical and religious question. Compromises proved unworkable, and in May 1845 a convention representing the Baptist churches of the South met at Augusta, Ga., and formed the Southern Baptist Convention. The common missionary enterprises were thenceforward carried on by various boards elected by the Convention and responsible to it and

thence to the churches. This has proved to be a very compact, flexible and effective organization, much superior to that of the North. There the old Convention was transformed after the division into the American Baptist Missionary Union, and made an exclusively foreign missionary society, and the Home Mission and Publication Society remained entirely independent. Three organizations instead of one proved to be a complicated and expensive method of doing the business of the churches, besides introducing rivalry and confusion, which became worse rather than better as time went on. The two Bible societies further complicated matters, and at one time threatened another disruption, but a convention held at Saratoga in 1883 effected a settlement of the Bible question by recommending that the work abroad be done through the Missionary Union and that at home through the Publication Society.

During this third period Baptists have prospered in all their enterprises, but their most notable advance has been in educational work. They began before the Revolution to establish schools, Brown University having been opened in 1764, and a number of colleges and theological schools were founded before 1850. Their combined endowments were small, probably less than $500,000, and their students few. There are now (1917) 15 theological schools, with 1,449 students, property valued at over $3,000,000 and endowments of more than $6,000,000; 12 institutions of collegiate grade, with 41,030 students, property valued at nearly $39,000,000 and endowments of over $42,000,000; besides academies to the number of 118, with 18,019 students, nearly $7,000,000 in property, but with endowments less than $2,000,000 — most of them having none whatever. These statistics do not include institutions like George Washington (formerly Columbian) University and the University of Chicago, founded by Baptists and largely endowed by them, which are not distinctively Baptist. The inclusion of such would about double the figures given above for property and endowment.

During this third period Baptists increased numerically much faster than the population, the latter increasing about three and one-third-fold, while Baptists increased sixfold. The statistics for 1917 report 1,986 associations, 51,248 churches and 6,197,686 members, or one to every 16 of the population, exclusive of the Territories. Of these 2,593,249 are Southern whites and 2,150,929 are negroes. The separate organizations of the latter were formed after the close of the Civil War, their first State convention being in North Carolina, in 1866, and their national convention having been organized in 1880.

The formation of the Northern Baptist Convention in 1907 was the result of agitation for the unifying of the work of Northern Baptists. It is a strictly delegated body from the churches, which elects the officers of the three missionary societies, supervises their work and controls their expenditures. In view of the legal obstacles to actual consolidation, this seems to be the most practicable method of securing unity. An annual budget is voted by the Convention and apportioned to the State conventions, thence to the associations and finally to each church, which is expected to raise or surpass the sum suggested. The practical efficiency of this scheme has not yet been fully demonstrated. In 1910 the Free Baptists decided to merge their missionary work with that of the Northern Baptists, which is as near an official union of the two bodies as the Baptist polity admits. The theological and other differences between the two bodies long since virtually disappeared.

The advance of home and foreign missions has also been a marked feature of recent years. Until 1859 Baptist foreign missions were practically confined to India and China. Since that time missions have been established in every Asiatic country, notably in Japan, and the scope of previous labors has been greatly widened. Since the United States acquired the Philippines a mission has been begun there. An already established African mission was taken over in 1884 and has been vigorously prosecuted. Southern Baptists, besides maintaining Asiatic missions, have evangelized some of the countries of South America. In Asia there are now 1,897 Baptist churches, with 213,647 members; in Africa, 131 churches and 18,924 members; and in South America 150 churches and 16,928 members. The contributions for missions have doubled thrice, and now amount for Northern Baptists to $1,300,000, and for the Southern to nearly $700,000. In home missions, besides the usual evangelizing agencies, a very important educational work among the Southern negroes has been conducted since the Civil War; 13 higher schools and 10 secondary schools are now maintained, at a cost of $130,000 a year. The work among foreign populations is also of much significance; 356 missionaries and four teachers are engaged in it. The annual income for this work amounts to more than $1,000,000. A similar work is conducted by the Southern Baptists through a Home Mission Board, with an expenditure of $387,000. There has been similar expansion in the work of the American Baptist Publication Society, which publishes 58,982,000 copies of Sunday school periodicals annually, and does a general publishing and book-selling business amounting to $321,000 additional. Besides this, it conducts Bible, colportage and missionary work, with an expenditure of over $600,000. The Sunday School Board of the Southern Baptists carries on similar work, with annual income of $474,000.

In all comparisons of Baptists with other religious bodies, only communicant members should be reckoned. Every Baptist member is necessarily a communicant, since a cardinal principle of all Baptists is that none should be baptized and become members of the Church except on their personal, intelligent profession of faith. However Baptists may differ on other points, they are a unit on this. They are also one in maintaining that baptism, as commanded by Christ and practised by the apostles, was the immersion of such a professed believer. A third point in which they are united is that the Christian Church is a democracy, in which "there is neither male nor female," and that each church is independent of any external authority in its own affairs. From this they draw a corollary, which may

be reckoned a fourth common principle, that church and state should be absolutely separate. With regard to other matters they have differed so widely, that there are still in the United States at least 13 different varieties of Baptists that maintain separate organizations. All but one of these, often called by way of distinction the "regular" Baptists, are comparatively small in numbers, the whole not numbering more than 400,000 members.

The number of Baptists in the world, as reported for 1916, is: 61,335 churches, with 7,200,324 members.

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**BAPTISTS, Freewill,** originated in New Hampshire in 1780, as a strongly anti-Calvinistic body. Benjamin Randall, a Congregationalist, left that body and advocated open communion. He was influenced in this step by the prominence given by the Methodists to various of the ideas advocated by him. Randall's first Freewill Baptist Church was in New Durham, N. H. In 1841 the Free-Communion Baptists of New York State united with the Freewill Baptists. In 1870 the Freewill Baptists numbered about 60,000, and in 1895 over 86,000. For some years past they have been officially known as "Free Baptists." In 1910 the Free Baptists and the Regular Baptists of the United States consolidated their missionary societies and work and made it possible for the local churches to unite, if they saw fit. In 1912 the Free Baptists had still 1,110 churches and over 65,000 adherents. The "Original Freewill Baptists," a distinct organization, similar to the General Baptists of England, date their origin from 1729. In 1912 they had 834 churches and over 57,000 members.

**BAPTISTS, German Brethren.** See GERMAN BAPTIST BRETHREN.

**BAPTISTS, Old School or Primitive.** This body split off from the other Baptist denominations about 1835, though they themselves claim to be the "original Baptists." They are opposed to the strong Calvinistic tendencies exhibited by others of the Baptist denominations, and do not countenance paid ministers, and consequently they do not maintain theological seminaries, schools or colleges. They have gradually lost their hold in the Middle States, where education has spread, but they still hold their own in the mountainous regions of Georgia, Tennessee and North Carolina. In all they have nearly 3,000 churches and over 100,000 members.

**BAPTISTS, Seventh-Day,** who hold that the command to observe the seventh day, the Jewish Sabbath, is incumbent upon all Christians as well as Jews, date the foundation of their society back to 1676, when the first church of the denomination was opened in London by Francis Bampfield, prebendary of Exeter Cathedral. Since then various churches professing the same views as Bampfield have come into existence and several of them have disappeared. The original society is still active. The first church of the Seventh-Day Baptists was founded at Newport, R. I., in 1671 by Stephen Mumford. Although this latter is older than the English by a few years it does not appear that the one grew out of the other. The American society, which has its missionary headquarters at Westerly, R. I., is active in missionary work and maintains a publishing house at Plainfield, N. J.; an academy at Salem, W. Va., and two colleges, one at Milton, Wis., and the other at Alfred Centre, N. Y. The 96 churches and more than 8,000 members of the American society are scattered over 24 States.

**BAPTISTS, Sixth-Principle,** believe that the laying-on of hands is an indispensable ordinance of the Church of Christ. They are a survival of the General Baptists who early made their appearance in Connecticut and Rhode Island. In 1917 the Society had less than 1,000 members.

**BAPTISTS, Two-Seed-in-the-Spirit,** had their origin in the preaching and ultra-Calvinistic doctrines of Daniel Parker, a Baptist elder and preacher of Tennessee. Parker, who was ordained in 1806 in Tennessee, became one of the strongest opponents of the organized work of the Church. In 1817 he moved to Illinois, where he continued his opposition to the work and organization of the regular Church for 19 years. Later he went to Texas. In various pamphlets (1826–29) Parker made public some very peculiar theories he held concerning the introduction and perpetuation of evil in the human race. According to these beliefs, God, when He created Adam and Eve, infused into them particles of Himself, thus making them altogether good; the devil corrupted them by infusing into them particles of himself. Eve, by predestination, brought forth a certain number of good and a certain number of bad offsprings; and all her daughters after her were predestined to do likewise. The atonement, according to Parker, applies only to those born of the good seed, those born of the bad being absolutely lost. This Baptist sect is uncompromisingly opposed to "all human institutions." They are found in 21 States and have nearly 500 churches and nearly 13,000 members.

**BAPTISTS, United,** were so-called after the union of the Regular and Separate Baptists in Kentucky in 1801. They departed somewhat from the strictly Calvinistic principles laid down by other denominations. The latest census gives the United Baptists 196 churches in Kentucky, Tennessee, Missouri, Alabama and Arkansas with a membership of about 13,000. At one time the Association was much stronger than it is now; but the union of many of the United Baptist churches with other Baptist denominations weakened them greatly.

**BAR.** *In heraldry,* one of the charges known as ordinaries. It is formed by two

horizontal lines passing over the shield and occupying one-fifth of the surface.

*In hydrography,* a barrier of sand in the channel of a river or along the seacoast. Rivers are constantly engaged in the transportation of sediment seaward, and whenever the current is checked the suspended material sinks and accumulates along the bottom. Bars thus formed may disappear during periods of floods when the water gains increased velocity, and they frequently change their position with slight alterations in the course of the current. Sandbars are also common at the mouths of rivers where the flow of the water, and therefore its transporting power, is lessened before entering the sea. The precipitation of the sediment is assisted in this case by the mingling of the fresh and saline water. The formation of such bars does not differ from that of a delta. The transporting action of currents and waves sometimes builds up a long line of bars or reefs along the seacoast, as is seen on the Atlantic and Gulf shores of the United States. See REEF.

*In law,* a word having several meanings; thus, it is the term used to signify an enclosure or fixed place in a court of justice where lawyers may plead. In English superior courts king's counsel are admitted within the bar; other members of the bar sit or stand outside. A railed-off space within the Houses of Lords and Commons is similarly called the bar. The dock, or enclosed space, where accused persons stand or sit during their trial is also called the bar; hence the expression "prisoner at the bar." It has also a general meaning in legal procedure, signifying something by way of stoppage or prevention. There is also a trial at bar — that is, a trial before the judges of a particular court, who sit together for that purpose in banc. The term is used both in England and the United States as a synonym for the legal profession.

*In music,* a line drawn vertically across the staff, for the purpose of dividing the music into equal measures of time. The term is very often improperly applied to measures themselves. The quantity of time included between two bars varies as the time is triple or common, the former being equivalent to three crotchets and the latter to four. The thick bar at the end of a piece of music is called the double bar. Bars were first used about the middle of the 15th century. See MEASURE.

**BAR, Karl Ludwig von,** German jurist: b. Hanover 1836; d. 21 Aug. 1913. He was trained in the universities of Göttingen and Berlin, and sat in the Reichstag 1890–93. He was a strong advocate of publicity as well as of more humane procedure in all criminal trials. Sometime professor at Göttingen and a member of The Hague tribunal, Dr. Bar acquired a world-wide reputation as a high authority on international law and a leading advocate of international arbitration. Important works by him are 'Das Internationale Privat und Strafrecht' (1862); 'Die Redefreiheit der Mitglieder gezetzgebender Versammlungen' (1868); 'Die Lehre vom Kausalzusammenhange im Rechte' (1871); 'Das Deutsche Reichsgericht' (1875); 'Staat und Katholische Kirche in Preussen' (1883).

**BAR,** Russia, a town in the government of Podolia; so called after the birthplace of its foundress, Bona Sforza, the wife of King Sigismund I of Poland. It is famous as the place where a confederation of the Polish people was held with a view to combating the Russian influence and the adherents of Russia in Poland, 29 Feb. 1768. The Russians took Bar by storm on the following 28 May, together with 1,400 men and 20 pieces of cannon. Eleven fairs are annually held here. Leather-dressing, distilling, brick-making and a trade in grain are carried on. Pop. about 13,000.

**BAR HARBOR,** Me., a popular summer resort in Eden township, Hancock County, Me., on the east shore of Mount Desert Island. It is on a branch of the Maine Central Railroad and is also served by steamship lines from New York, Boston, Portland and other Atlantic coast ports. The ocean here is often too cold for bathing, even in summer, and a large open-air sea-water swimming pool serves as a substitute. There is a naval coaling station on the north shore of Eastern Bay, and Bar Harbor is frequently the rendezvous in summer of the north Atlantic squadron of the United States navy. It derives its name from a sandy bar which connects Mount Desert with the largest of the Porcupine group. The surrounding scenery is very pleasing, and within a short distance are many points of interest readily accessible to the tourist. Among these are the summit of Green Mountain, Eagle Lake, Mount Newport, Kebo, The Ovens, Great and Schooner Heads, Spouting Horn, Thunder Cave and Eagle Cliff. First discovered by Champlain, Mount Desert was settled in 1608 by French Jesuits, whose colony was destroyed eight years later by an expedition from Virginia. A permanent settlement was effected by the English in 1761. The town of Mount Desert was incorporated in 1789. Since that date the towns of Eden, Cranberry, Tremont and Southwest Harbor have been formed from the original tract. Consult Street, 'Mount Desert: A History' (1905). Pop. about 2,200.

**BAR-LE-DUC,** bär-lĕ-dük, or **BAR-SUR-ORNAIN,** bär-sür-ôrnăn, France, capital of the department of Meuse, 125 miles east by south from Paris. It consists of an upper and a lower town, the former of which commands a fine view. The lower town extends into the valley traversed by the Ornain, here crossed by three stone bridges. The ancient Church of Saint Etienne is of 14th century workmanship; the ruined castle commanded the entrance into Lorraine. The streets are wide and well laid out, but the public buildings are inferior. The chief manufactures are textiles and paper, and there are foundries. The preserved fruits and confectionery, as well as the wines of Bar-le-duc, are in repute. Pop. 17,068.

**BAR SHOT,** a double-headed shot, made of two half-balls connected by a bar, and formerly used in naval battles for cutting away the masts and rigging of the enemy's ship.

**BAR-SUR-AUBE,** bär-sür-ōb, France, a town 34 miles east of Troyes, in the department of Aube, notable as the scene of a victory of the allied forces commanded by Schwarzenberg over the French, commanded by Macdonald and Oudinot, 27 Feb. 1814. The council

which decided the plan of campaign of the Allies was held here the day before the battle. It is an ill-built, ancient town, numerous old coins and urns attesting that the Romans must have had a station here. Bar-sur-Aube was destroyed by the Huns in the 5th century, but was rebuilt soon after, when it became a place of commercial importance. A chapel on the bridge over the Aube marks the spot from which the Bastard of Bourbon was hurled into the river by command of Charles VII in 1441. The leading manufactures include leather, flour and agricultural implements, and there is a trade in grain, wine and wool. Pop. 4,533.

**BAR-SUR-SEINE,** bär-sür-sān, France, an ancient town in the department of Aube, pleasantly situated on the left bank of the Seine, 21 miles by rail southeast of Troyes. The river is crossed here by a double bridge. It is notable as the scene of a victory of the allied forces over the French, in March 1814. Pop. about 3,300.

**BARABA,** bä-ra-bä' or **BARABA-TARTAR,** a steppe of Siberia, in the government of Tomsk, occupying more than 100,000 square miles. Covered with salt lakes and marshes, it was colonized in 1730 by the Russians, who have since cultivated parts of it.

**BARABAS,** ba-răb'as, the principal personage in Marlowe's tragedy, 'The Jew of Malta.'

**BARABBAS,** the robber released by Pilate at the Passover when Jesus was condemned to death. It was a custom of the Roman government, for the sake of conciliating the Jews, to release one Jewish prisoner, whom they might choose, at the yearly Passover. Pilate desired thus to release Jesus, but the Jews demanded Barabbas (Matt. xxvii, 16-26).

**BARABBAS: A DREAM OF THE WORLD'S TRAGEDY,** a romance by Marie Corelli. It is the story of the last days of Christ, his betrayal, crucifixion and resurrection. The story is dramatically told, florid in style and appeals more to the emotions than to the reason.

**BARABINSKI,** a Tartar tribe living on the banks of the river Irtish, and engaged in pastoral and agricultural pursuits. Their religion is Shamanistic, but Christianity has made some progress among them.

**BARABOO,** băr'a-boo, Wis., city and county-seat of Sauk County, on the Baraboo River, and the Chicago & N. W. Railroad, 40 miles northwest of Madison and three miles from Devil's Lake. Settled in 1839 in the centre of a scenic and agricultural region, it has important manufacturing interests, which are promoted by excellent water power; is a noted fruit centre; and has a national bank, city hall, water-works, electric light, gas works, daily, weekly and monthly periodicals. It is governed, under an incorporation charter of 1882, by a mayor, elected biennially, and a municipal council. Pop. 7,000.

**BARABRA,** bă-rä'bra, Africa, a mixed ethnic group — Nubian, Egyptian and Arab — living on both sides of the middle Nile, from Wady Halfa to Assouan. They are about 40,000 in number, and are believed to belong to the same stock as the ancient Egyptians.

**BARACOA,** bä-ra-kō'a, Cuba, a seaport near the eastern end of the island, in the province of Santiago de Cuba, about 90 miles east by north of Santiago. It has a land-locked harbor and exports cocoa, bananas and other tropical fruits. The industries include the making of oil from the cocoanut and the manufacture of chocolate. The first settlement of white men on the island of Cuba was made here by Velasquez in 1511. This town was the capital of Cuba from 1518 to 1522. Near it is the mountain noted as the "Anvil of Baracoa." In the vicinity Maceo and his men began in 1895 the struggle for Cuban independence. Pop. about 6,000.

**BARADA,** bă-rä'da, the Abana of the Bible, a river of Syria, rising in the Anti-Libanus and flowing across the plain to the east past Damascus. It loses itself in a lake called Bahret-el-Ateibeh. Around Damascus its waters are used for irrigation by means of canals.

**BARAGA,** băr'a-ga, **Frederic,** Austrian Roman Catholic prelate and missionary: b. Treffen, Carniola, 29 June 1797; d. Marquette, Mich., 19 Jan. 1868. He came to the United States in 1830 and spent the rest of his life among the Chippewa and Ottawa Indians in Michigan. His Chippewa grammar (1851) and Chippewa dictionary (1851-53) are of philological importance, and he was also the author of a work in German on the 'History, Character, Manners and Habits of the North American Indians' (1837).

**BARAGUAY D'HILLIERS,** bă-ra-gā-de-yă, **Achille,** COUNT, marshal of France: b. Paris 1795; d. 1878. He was the son of Louis Baraguay d'Hilliers (q.v.). In 1830 he took part in the expedition to Algeria, in which his success gained him the confidence of the government, which created him a lieutenant-general. In 1841 he was made governor-general of Algeria. On the fall of Louis Philippe in the revolution of 1848 the provisional government appointed him to the command of the military division of Besançon. He replaced Changarnier in the command of the army of Paris, and concurred in the accomplishment of the *coup d'état* on 2 Dec. 1851. In the war with Russia in 1854 Baraguay d'Hilliers was commander-in-chief of the Baltic expedition, and for his services received the dignity of marshal of France, and later was nominated a senator. He took an active part in the campaign of 1859, when France leagued with Sardinia to free Italy from Austrian domination.

**BARAGUAY D'HILLIERS, Louis,** French general: b. Paris 1764; d. Berlin, 6 Jan. 1813. Receiving an appointment in the army of Italy from Napoleon, he shared all the success of the campaign of 1796-97. Made general of division and commandant of Venice, in 1798, he accompanied the expedition to Egypt; and afterward successively held appointments on the Rhine, in the Tyrol and in Catalonia. He commanded a division in the Russian campaign of 1812, but during the retreat incurred the displeasure of Napoleon and appears to have died from chagrin and disappointment.

**BARAK** ("Lightning Flash"), son of Abinoam, was the ally of Deborah in the struggle against the Canaanites. He led 10,000 men of

Naphtali and Zebulun in the direction of Mount Tabor while Deborah undertook to attract Sisera's army toward the same place. Barak routed the Canaanites and pursued them to Harosheth, where he and Deborah sang the 'Ode of Triumph.' Barak seems to have been a representative Jewish leader of his time. The name Barak is met with in various forms in cognate languages; Baraous, for example, was the surname of Hamilcar. See DEBORAH.

**BARANOFF, Alexander Andreevich,** Russian explorer and merchant: b. Kargopol 1747; d. 16 April 1819. A merchant and manufacturer in Irkutsk, Siberia, in 1780, he became manager of the colony previously founded on Three Saints Bay, Kodiak Island, Alaska, in 1791, but soon afterward taking charge he transferred the trading post to Saint Paul's Harbor, Kodiak Island, and established posts in Cook Inlet and in Prince William Sound. At Vosressensky Harbor, now Resurrection Bay, in 1794, he built the first ship constructed north of Vancouver Island on the northwest coast of America. In 1796 he placed a colony at Yakutat Bay. Upon the organization of the Russian American Company, in 1799, he was made chief manager, and his jurisdiction included all of Alaska, the Aleutian Islands and the Kurile Islands. In this year he established a post at Old Sitka, on the west side of Baranof Island, which was destroyed by the Indians in 1802. In 1804 he drove the Indians from the site of the present town of Sitka, built a fortified post and named it New Archangel, to which he transferred the headquarters of the company. During Baranov's administration of the affairs of the company it maintained trading posts only along the southern part of Alaska, from Sitka to Unalaska, including the Chugatch Gulf (Prince William Sound), and the Gulf of Kenai (Cook Inlet). They traded as far north as the Bristol Bay region and took seals on the Pribylof Islands, but had no settlements north of those places. In 1812 he placed a fort at Ross, near Bodega Bay, California, and also maintained a station on the Farallon Islands for several years. He extended the commerce of the company to the Spanish settlements in California, to the Sandwich (Hawaiian) Islands and to China. His administration of the affairs of the company closed in 1818, and in November of that year sailed for Russia by way of the Cape of Good Hope. The ship was detained at Batavia, Java, where Baranoff fell ill of a fever, and a few days after leaving that port he died and was buried in the Straits of Sunda.

**BARANOFF ISLAND,** the most important of the Alexander Islands, Alaska. It is about 100 miles long and 25 miles broad. On its northwest coast is the town of Sitka. The island derives its name from the Russian trader, Baranoff, who in 1799 took possession of it.

**BARANTE,** bă-rănt, **Amable Guillaume Prosper Brugière, Baron de,** French historian and statesman: b. Riom, Auvergne, 10 June 1782; d. 23 Nov. 1866. After filling some subordinate offices he was appointed in 1809 prefect of La Vendée. In this year was published his 'Tableau de la Littérature Française au XVIIIe Siècle.' In 1815 Louis XVIII made Barante Secretary of the Ministry of the Interior, and about the same time he took his seat in the Chamber of Deputies, where he voted with the Moderate Liberals. In 1819 he was raised to the Chamber of Peers. His principal work, 'Histoire des Ducs de Bourgogne de la Maison de Valois, 1364–1477' (1824–28), secured his election to the Academy in 1828. Between 1830 and 1840 he represented France at Turin and Saint Petersburg, but after the revolution of 1848 he devoted himself entirely to literary pursuits. Other works of his are 'Histoire de la Conventionale' (1851–53); 'Histoire du Directoire' (1855); 'Etudes Historiques et Biographiques'; 'Etudes Littéraires et Historiques' (1858). Consult also 'Souvenirs du Baron de Barante' (1890–99).

**BARANTZEVICH, Kazimir Stanislavovich,** Russian man of letters: b. Saint Petersburg 1851. His father was a descendant of a noble Polish family and his mother was French. At the time of the Polish insurrection (1831), Barantzevich's grandfather was hung in the presence of his wife and two sons, but the tradition of revenge was not maintained by either the father of the author or any member of the family. Barantzevich's taste for books was created in him by his own father, who taught him to read and write at the age of five. When the author was eight years old he read eagerly Pushkin's 'Syn Otechestva' ('The Son of the Country') and under the inspiration received from that classic wrote, a year later, his first essay, 'Ponyatovski,' glorifying the deeds of a Polish hero who opposed the aggression of the Russian armies. Before he entered the gymnasium he had read a great number of good books in various languages. But the subjects taught in the school interested him in a very small degree and he left the classroom in the fourth year. At that time appeared his poem, 'Zabytaya Dyerevnya' ('Forsaken Village'), which, although obviously a mere imitation of Nekrasov, earned for him a remarkable popularity among the peasantry whose close friend he wished to become despite the tradition of his aristocratic family. When his father died he fell into dire poverty and was obliged to work for his living from morning till late at night. However, despite all these strenuous efforts, he adapted A. Tolstoy's 'Prince Serebranyi' into a drama 'Oprichina' (Life-Guards) which was produced successfully and which brought to the author an honorarium of 600 rubles. When his mother died he saw no obstacle in marrying his lowly but beautiful fiancée, Dara Nikolaevna Aleksyeva. This marriage and the birth of a child increased the author's burden and the family was obliged to live in the house of a drunken train conductor. It was here that he wrote 'Odin iz nashih starih znakomyh' ('One of our old acquaintances'). But fame came to him from his novel, 'Porvannyia Struny' ('Broken Strings'), and almost all first-class magazines urged him to contribute to their columns, which he did most successfully. In a series of remarkable short stories ('Under Oppression,' 'The Old and the New,' 'Short Stories') and his separately published novels, 'Raba' ('Bondmaid') and 'Chuzhak' ('Stranger') he has given powerful sketches of

the life of the lowly plebeians which bear the seal of his own struggle in life. The society of Petrograd has not been known to him intimately enough to describe its life with exactitude and his cardinal errors are uniformity of types and absence of intrigue. Man and his soul form the principal subject of his work, and, while his elaboration could be, and often is, surpassed from the artistic point of view, his stories have thrilled and elevated the souls of his readers as much as anything that has been written in Russian in the course of the last century.

**BARASINGHA**, bär-ą-sĭn'gą. See SWAMP-DEER.

**BARATARIA, Pirates of,** a company of outlaws under the leadership of a notorious bandit, Jean Lafitte, who established their rendezvous in the Bay of Barataria, 40 miles south of New Orleans. They committed great depredations on English and Spanish shipping, but their colony was broken up in 1814 by a United States naval force. Lafitte and some of his men subsequently served under Jackson in the battle of New Orleans.

**BARATARIA BAY,** a body of water in the southeastern part of Louisiana, extending north from the Gulf of Mexico, between the parishes of Jefferson and Plaquemine. It is about 15 miles long by six wide, and it and the lagoons branching out of it were rendered notorious about the years 1810–12 as being both the headquarters and rendezvous of the celebrated Lafitte and his buccaneers. See NEW ORLEANS, CAMPAIGN AND BATTLE OF.

**BARATHRON,** the name of a deep gorge near Athens, into which criminals condemned to death were thrown. It was originally a quarry, but was enlarged in order to serve for purposes of punishment. Usually persons were thrown into it after execution, but occasionally while living.

**BARATIERI,** bä-rä-tyā'rę, **Oreste,** Italian general: b. Condino 1841; d. 1901. He fought under Garibaldi in Sicily in 1860 and joined the regular army in 1866. He was appointed in 1891 governor of Eritrea, Italy's new possession on the Abyssinian coastland of Africa. Under the schemes of conquest entertained by the Italians Baratieri advanced with an army into the highlands of the interior, capturing Kassala in 1894, and later marching into Tigré, whose prince he twice defeated in January 1895. King Menelik's forces to the number of 100,000 were now sent against Baratieri, who was obliged in consequence to retreat from Adowa, the capital of Tigré, in the direction of Adigrat. Demoralization of the Italians becoming evident, Baratieri, fearing it might become general and hamper his retreat, determined to risk all on a battle with the Abyssinians, and once more turned his forces on Adowa. On 1 March 1896 the battle was fought near Adowa, the Italians were routed with a loss of 250 officers, 7,000 men and all their artillery. Baratieri was court-martialed and was absolved of criminal responsibility but was censured for his conduct of the campaign, and left the army. He published his 'Mémoire d'Africa 1892–96' in 1897 as a defense of his method.

**BARATYNSKII** (properly BORATYNSKII), **Evgenii Abramovich,** Russian poet: b. 10 Feb. 1800; d. 29 June 1844. He was educated in the page-corps, from which he was expelled in 1816. Later (1820) he joined an infantry regiment in Finland, where he became an officer. In 1825 he married, retired from military service and traveled extensively through Germany, France and Italy. He started writing poetry very early in life and had the good fortune to become intimately connected with Pushkin, Gnedich, Pletnevyi and other young and gifted poets whose friendship undoubtedly influenced the development and direction of his talent. His lyric poems soon gained him a prominent place in the number of Pushkin's poetic circle of the so-called "romanticists." In the midst of the savage nature of Finland the romantic nature of the poet grew more powerful, but the predominant quality of his poetry is the elegiac tone, especially in his 'Eda' (1826). This poem was soon followed by 'Ball,' 'Orgie,' 'Gypsy-Girl,' in which the poet excels in original simplicity, choice of figures and lively colors, but in which he shows the powerful influence of Pushkin and Byron. With regard to technique he is a true master of form and rhyme and some enthusiasts have placed him much higher than Pushkin himself as a versifier. But the main characteristic of his poetry is meditation and absence of true emotion, the chief requisite for a true masterpiece in lyricism; in his poetry there is no trace of that sentimentality that is so abundant in the work of his models. As a thinker he is destitute of the definite and his characters are but shadows in a mirror which leave no deep impression despite their exquisite exterior form. The best of his lyrics are undoubtedly 'Finland,' 'The Last Poet' and 'On the Death of Goethe.' A collective edition of his works appeared for the first time in 1827 (2d ed., Moscow 1835), from which many German and French translations have been made. Consult 'Russki Arkhiv' (1868, pp. 141–47 and 866–72); Koenig, 'Litterärische Bilder aus Russland.'

**BARB,** a horse of the Barbary breed, introduced by the Moors into Spain, and of great speed, endurance and docility. This breed is said to be a variety of the Arabian, and most of the progenitors of the present thoroughbred horse were of the same strain.

**BARBACAN,** or **BARBICAN,** a projecting watch tower or other advanced work before the gate of a castle or fortified town. The term barbacan was more especially applied to the outwork intended to defend the drawbridge, which in modern fortifications is called the *tête du pont.* At the castles of Warwick and Alnwick the mediæval barbacans still remain, but the barbican gate at York is almost entirely of modern construction.

**BARBACENA,** bär-ba-sā-'na, Brazil, a flourishing town in the state of Minas-Geraes, 125 miles northwest of Rio de Janeiro. It is situated in the Mantiqueira Mountains, about 3,500 feet above the sea, and the surrounding district produces cane sugar, coffee and grain. The town is a commercial centre, being the outlet for the product of mines in the district, but much of its importance has been lost with

the development of transportation facilities. Barbacena is noted for its healthfulness and is a popular resort. Pop. 6,000.

**BARBADOS,** bar-ba'-dōz, an island of the West Indies, lying in the Atlantic Ocean more than 100 miles east of the nearest members of the chain of Lesser Antilles, in lat. 13° 4′ N. and long. 59° 37′ W. (See ANTILLES). The entire area of the island available for the purpose — or 100,000 acres out of a total acreage of 106,470 (about 166 square miles) — is under cultivation. Some of the white inhabitants are of the best English stock, being descendants of early settlers who were closely allied by the bond of blood or ties of friendship with the colonists of Virginia. The only foreign journey ever taken by George Washington was in 1751 (28 September–22 December), when he visited this island in company with his invalid brother, Lawrence. The rainfall is abundant, and the climate agreeable, thanks to trade-winds blowing steadily across the Atlantic. Barbados is a colony of England, with its own governor, legislature, etc. In addition to many lesser educational institutions, the island has Codrington College, which is affiliated with the University of Durham, England. Its capital, Bridgetown, hot, dusty and commercially active, is also the see of the bishop of Barbados. There is one narrow-gauge railway, and the highways are excellent. The chief industry is the cultivation of sugar-cane, to which the soil is peculiarly adapted. The successful manufacture of sugar in the island began about the middle of the 17th century. The Sea Island cotton industry was revived in 1902 with success, and the acreage under this form of cultivation amounts to nearly 2,000 acres, from which 900,000 pounds of "lint" are raised. Food supplies are imported largely from the United States, to which country nearly the entire sugar product is sent. The value of the annual exports is about $4,000,000; of the average annual imports about $6,000,000. Like Guadeloupe and its dependencies, and Désirade and Maria Galante, Barbados is a coral island. Its length is 21 miles, and its width 15 miles. The interesting 'Pocket Guide' states that Barbados is "undoubtedly the healthiest of all the West Indian islands. On the windward side the climate is especially invigorating, and the island is much patronized by residents in neighboring colonies as a health resort. The birth-rate is about 36 and the normal death-rate not more than 26 per thousand." The island has "representative institutions without responsible government. They date from the royal charter of Charles I, 2 June 1627. Next to the house of commons and the house of assembly in Bermuda, the Barbados house of assembly is the most ancient legislative body in the British dominions. The government now consists of a nominated legislative council, a house of assembly, consisting of 24 members elected annually by the people; an executive council, which consists of the governor, the colonial secretary and the attorney-general ex officio, and such other persons as may be nominated by the King; and an executive committee." Steamships of at least 14 companies serve the island. Ober (see *Bibliography*) wrote in praise of Codington College: "This famous university, the only one of its class in the British West Indies, is situated in Saint John's parish, 15 miles from Bridgetown." Founded by Sir Christopher Codington in 1710 and amply endowed, "no more delightful place can be imagined than this as a retreat for students, with vine-covered corridors opening upon avenues of tall and stately palms." Harrington College, founded 23 years later, also does honor to the island.

Spanish discoverers, whose fancy was struck by the beard-like clumps of vines or tendrils hanging from the wild fig trees, named the island *Los Barbados* ("the bearded"—in plural). They made this immortal observation, but no settlement. The first settlement was made in 1625 by a company of Englishmen. Sir Frederick Treves (see *Bibliography*) writes: "It is in Barbados that there will be found the most substantial relics of the old West Indian aristocracy, of the planter prince." The number of inhabitants in recent years has varied between 196,000, or about 1,180 to the square mile, and 171,893, or 1,033 + to the square mile: About 11 per cent Caucasians. No other colony or country, with the possible exception of some of the provinces of China, is more densely populated.

**Bibliography.**—Aspinall, A. E., 'Pocket Guide to the West Indies' (Chicago and New York 1914), and 'The British West Indies' (London 1912); Ober, F. A., 'Guide to the West Indies' (New York 1908); Treves, F., 'The Cradle of the Deep' (London 1908). See also article WEST INDIES — *Bibliography.*

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**BARBADOS CEDAR,** a cedar or juniper (*Juniperus barbadensis*). It is found in Florida and the other warm parts of America.

**BARBADOS CHERRY,** a West Indian shrub or small tree (*Malpighia glabra*) of the natural order *Malpighiaceæ,* with handsome crimson axillary flowers, cultivated to some extent in warm countries for its acid fruit, inferior to but resembling a white cherry. *M. urens* also bears an edible but smaller fruit, and is sometimes also called Barbados cherry.

**BARBADOS FLOWER FENCE,** or **BARBADOS PRIDE,** the beautiful plant *Poinciana pulcherrima.* It belongs to the leguminous order, and the sub-order *Cæsalpinicæ.* It is a low, spiny tree with an odor like savin. It is a native of the tropics of both hemispheres, and in Barbados especially it is used for fence purposes.

**BARBADOS GOOSEBERRY, BLAD APPLE,** or **LEMON VINE** (*Pereskia aculeata*), a shrubby, slender, tropical American cactus which bears lemon-yellow, smooth, edible pear- or egg-shaped fruits as large as olives. The species is widely used in greenhouses as a stock on which to graft other species of cacti. Its more sturdy relative, *P. bleo,* is similarly used for larger species of cacti.

**BARBADOS LEG,** a name frequently applied to the disease called elephantiasis. It is common in Barbados, and is endemic in many tropical and semi-tropical countries. See ELEPHANTIASIS.

**BARBADOS LILY,** the *Amaryllis equestris,* now called *Hippeastrum equestre,* an ornamental plant from the West Indies.

**BARBARA, Saint,** virgin and martyr much honored in the Greek and Roman Catholic Churches who is supposed to have flourished in the 3d or early part of the 4th century. Her history has been related by various chroniclers, but with so many discrepancies that it is difficult to ascertain either the events of her life or the circumstances of her martyrdom. According to Jacobus de Voragine, the author of the 'Aurea Legenda,' she was born at Heliopolis, in Egypt, of pagan parents. On arriving at the age of womanhood she was very beautiful, and her father, fearing lest she should be taken from him, confined her in a tower, and in the pictures of this saint the tower is therefore one of her most frequent attributes. In her seclusion she heard of the preaching of Origen, and wrote to him begging for instruction, whereupon he sent one of his disciples who taught and baptized her. On learning this her father was so incensed that he put her to death. Metaphrastes and Mombritius inform us that she was martyred at Heliopolis in the region of Galerius and their account agrees with the Emperor Basil's Menology and with the Greek Synaxary. Others again hold that she suffered at Nicomedia, in 235, under Maximian I. Her festival occurs 4 December.

**BARBARA ALLEN'S CRUELTY,** an old English ballad preserved in Percy's 'Reliques.' While Barbara's lover, Jemmy Groves, was on his death-bed, her only remark to him was, "Young man, I think you're dying." For this unnatural composure she subsequently endured the pangs of remorse.

**BARBARA FRIETCHIE,** the title of a noted poem by Whittier (1863) founded upon an incident reported to have occurred in Frederick, Md., in the Civil War. Recent investigations have thrown some doubt upon the authenticity of the account. A play upon this theme has been written by the late dramatist Clyde Fitch.

**BARBARELLI, Giorgio.** See GIORGIONE.

**BARBARIAN,** a term used by the Greeks to designate a foreigner; one who could not speak Greek. At first the Romans were included by the Greeks under the term barbarian; but as the inhabitants of the great Italian city gradually gained imperial power, and, moreover, began to consider the Greek language a desirable if not even an indispensable part of a liberal education, they were no longer placed in the category of barbarians, nor was their speech deemed barbarous.

**BARBAROSSA.** See FREDERICK BARBAROSSA.

**BARBAROSSA, Arooj, or Horuk,** corsair chieftain, styled "Barbarossa" from his red beard. He was the son of a Greek at Mitylene, and in 1516 assisted Selim, King of Algiers, in driving the Spaniards out of that country. Having taken possession of the capital he put Selim to death and mounted the throne himself. He died in 1518.

**BARBAROSSA, Khair-ed-Din,** the younger brother and successor of the preceding. He surrendered the sovereignty of Algiers to Selim I, Sultan of Turkey, in exchange for a force of 2,000 janissaries and the title of dey. He was afterward appointed "captain pasha" or high admiral of the Turkish fleet, conquered Tunis, and in 1538 gained a victory over the imperial fleet under the command of Andreas Doria in the Bay of Ambracia. He died in 1546.

**BARBAROUX,** bär-bä-roo', **Charles Jean Marie,** celebrated French revolutionist of the Girondin party: b. Marseilles, 6 March 1767; d. Bordeaux, 25 June 1794. At first an advocate and journalist at Marseilles, he was sent by that city to the Constituent Assembly at Paris. There he opposed the Court party and took part with the minister, Roland, then out of favor. After the events of 10 Aug. 1792 he returned to his native town, where he was received with enthusiasm, and was soon after chosen delegate to the convention. In the convention he adhered to the Girondists, and belonged to the party who at the trial of the King voted for an appeal to the people. He boldly opposed the party of Marat and Robespierre, and even directly accused the latter of aiming at the dictatorship; he was, consequently, in May 1793 proscribed as a royalist and an enemy of the republic. He fled to Calvados, and thence with a few friends to the Gironde, where he wandered about the country, hiding himself as best he could for about 13 months. At last, on the point of being taken, he tried to shoot himself; but the shot miscarried, and he was guillotined at Bordeaux. He was one of the great spirits of the Revolution. There was no loftier-minded dreamer in the Girondist ranks; hardly a nobler head than his fell in that reign of terror.

**BARBARY,** Africa, a general name for the most northerly portion of the continent, extending about 2,600 miles from Egypt to the Atlantic, with a breadth varying from about 140 to 550 miles; comprising Morocco, Fez, Algeria, Tunis and Libya (including Tripoli, Barca and Fezzan). Bordered by the Mediterranean on the north, and by the Sahara on the south, the temperature of this region is generally moderate and remarkably uniform, seldom descending to the freezing-point, and seldom coming up to sultry. From March to September is the dry season, when the ground is frequently so parched as to render walking upon it impracticable. From September to March is the wet season, but the rains are moderate, and almost every day affords a respite of sunshine. The soil is fertile, though sandy and light on the coast, the climate healthy, and agricultural productions are various and abundant. The range of production gives a combination of both tropical and temperate fruits. Agriculture is, nevertheless, greatly neglected, but under European influences has made considerable advance in the present century. For three centuries the inhabitants of the Barbary states rendered themselves the pest of human society by their depredations upon the commerce of the seas until they were finally subdued in the 19th century. See BARBARY POWERS, UNITED STATES TREATIES AND WARS WITH THE.

*History.*—Anciently, all Africa was comprehended under two divisions — Egypt and Libya — while Libya was subdivided into northern and southern Libya. North Libya comprised mainly what is now known as the Barbary states. Herodotus says that in his day northern Libya was inhabited by the indigenous race of Libyans

and by the foreign Phœnicians and Greeks. These latter settled at various points, from Egypt to Carthage, while the indigenous Libyans occupied from the east to the west, throughout the entire extent. Of the origin of the Libyans, whom Herodotus calls indigenous, we have no trace. Arabian tradition says they colonized Libya from Yemen. The Phœnicians early settled Carthage (869 B.C.) and perhaps the still more western coasts of Mauritania,—at least it appears that Carthage was a powerful state at the invasion of Greece by Xerxes. The Cyrenians, who were Greeks, had colonized at Cyrene, just east of the bay of the Mediterranean called Syrtis Major (Gulf of Sidra), in what is now known as Barca. West of Carthage lay Numidia and Mauritania, even to the Pillars of Hercules; east of Cyrene was Egypt; while between these two foreign colonies stretched the narrow coast line, from the Major to the Minor Syrtis, known as Emporia. The rapidly growing Carthaginian power soon extended colonies along the entire coast from the Pillars of Hercules to Grecian Cyrene. The jealousy of Rome was not long in being awakened against so threatening a rival. The history of the Punic wars is well known. At the end of 117 years the Carthaginian power was extinguished, Carthage herself in ruins, and Africa a Roman province from Mauritania to Cyrenaica. The more complete subjugation of Numidia was accomplished in the Jugurthine War, and that of Mauritania in the reign of Claudius. Thus the territory of the Barbary states, from independent native sovereignties and foreign colonies, had come into the hands of Rome. About 400 A.D. several Teutonic tribes, overrunning Gaul and crossing the Pyrenees, settled in Spain. When, in 428, Boniface revolted against Honorius, the Vandals crossed the Fretum Gaditanum into Africa, led by Genseric, drove out the inhabitants, utterly expelled the Roman power from upper Libya, and reigned 100 years. Then came the struggle under Justinian for the re-establishment of the Roman ascendency. By Belisarius it was conducted to a successful issue, and northern Africa was united to the Eastern empire. For over 300 years this relation continued until about the middle of the 7th century; the Saracens overran Numidia and Mauritania to the Atlantic, and, notwithstanding the disastrous death of their leader Okba, the sceptre of upper Libya passed again from the hands of Rome into that of Arabia. Fifty years later the conquests of Musa and Tarik were pushed across the straits, and a Saracenic empire established in Spain. But the revolution which brought the Abbasides to the caliphate of Arabia and drove the only surviving caliph of the Ommiades into Spain prepared the way for the independence of the western colonies, and Africa began to throw off the Saracenic yoke (788). A succession of fortunes now attended the states of upper Libya. For eight centuries they were alternately tributary and independent, passing from hand to hand, like the stakes of a faro bank, till in the 16th century the two brothers Barbarossa conquered the whole territory of Numidia and Carthage, and erected the regencies of Algiers and Tunis. A few years later the Turkish Sultan, whose supremacy the younger Barbarossa had acknowledged, erected the pashalic of Tripoli over the ancient Cyrenaica, while in the west there was a gradual consolidation of power into the hands of Mohammed ben Hamid, and his son, who finally established the dynasty of Sherifs in the empire of Morocco, now divided into two protectorates, the district west of Fez under the protection of Spain, and the district east of Fez under the protection of France, while the French erected, between Morocco and the possessions of the Porte, the regency of Algeria. Tripoli came under the sovereignty of Italy in 1912. The religion of the Barbary states is generally Islamism. The European settlers are of course Christians, or Jews, while the blacks, who are slaves, are pagans. There seem to be at present six races or tribes of men inhabiting the Barbary states: (1) The Moors. (2) The Arabs. (3) The Berbers, who are indigenous, and from whom the states probably received the appellation Barbary. (4) The Jews. (5) The Turks. (6) The Blacks. The Arabs call the Barbary states *Moghreb* (west). The language of the people inland differs from that of Arabia and Syria, though not so much as on the coast. See ALGERIA; BARCA; FEZZAN; MOROCCO; TRIPOLI; TUNIS. Consult Dumont, P. J., 'Thirty-five Years Slavery and Travels in Africa' (London 1819); Edwards, A., 'The Barbary Coast' (New York 1913).

**BARBARY APE, or MAGOT,** a small species of ape of the genus *Macacus,* interesting as being the only animal of the monkey kind in Europe. It is found on the rock of Gibraltar, where the individuals are few in number; whence it has been concluded by M. de Blainville that they have sprung from domesticated apes escaped from confinement in the houses of Gibraltar. The Barbary magot is a small tailless monkey completely covered with greenish-brown hair. In its wild state it is lively and intelligent, but becomes sullen and intractable in captivity.

**BARBARY POWERS, United States Treaties and Wars with the.** The four Mohammedan states of Morocco, Algiers, Tunis and Tripoli, though either independent or nominally tributary to Turkey, were for some three centuries, the 16th to the 19th, a common foe to Mediterranean commerce and travel. Almost their entire subsistence was on the produce of piracy: either the avails of captured stores, the ransoms for prisoners held in slavery or the blackmail paid by other powers for immunity. The large states paid them a regular annual tribute—though by joining forces they could have stopped the piracy at any time,—on the express ground that it gave them the monopoly of Mediterranean trade against the small ones which could not afford it; and England, which paid about $280,000 a year, deliberately put the price high to prevent others from bidding up to it. Even these sums bought only temporary truce, as the pirate state lived on depredations, and the tribute had to be supplemented with constant presents and concessions. A part of this tribute was always demanded in armed vessels, ammunition and naval stores, so that the civilized powers furnished the means for plundering themselves. The ransom of captives from them was a leading object of public and private charity, and collections were taken

up in churches for this end. In 1786 there were 2,200 Christian captives in Algiers alone. When the United States began to send vessels to the Mediterranean no longer protected by the English flag, the pirates at once assailed them; and in July 1785, the Algerines captured two vessels and 21 men. Congress appropriated $80,000 in 1784 to buy immunity after the European model; but it seemed likely to cost nearer $1,000,000, and, reversing their usual parts, John Adams preferred to pay as a cheaper resort than fighting, while Jefferson considered fighting both cheaper, more honorable and the preparation for a better future. Morocco, for some reason much the most amenable, signed in 1787 a 50-years' peace without tribute, though with the understanding of some presents to the Sultan, and kept it, save for a short time in 1803. The Dey of Algiers asked $59,496 for his captives, or over $2,800 each, though the last French captives ransomed had only cost $300, or with costs, $500; and the matter hung fire for several years, 11 of the 21 dying before the final ransom of 1795. In 1793, by the carelessness or bad faith of an English counsul, the Algerine corsairs gained entrance to the open sea beyond the Strait of Gibraltar, and captured 10 United States vessels at a blow, the number of our captives in their hands in November being 115. Negotiations were set on foot, and on 5 Sept. 1795 Congress paid Algiers $992,463.25 for peace and the ransom of all our prisoners — this sum including a 36-gun frigate costing $99,727, and about $100,000 worth of stores and ammunition. It also engaged to pay $21,600 a year thereafter in naval stores, $20,000 on presentation of a consul, biennial presents of $17,000, and other regular and incidental gifts. In 1798 it sent four armed vessels as arrears. A treaty was made with Tripoli in November 1796, on much the same terms save that there were no ransoms; and one with Tunis, in 1799, for $107,000. The cost of immunities and ransoms in 1802 had been over $2,000,000; and of course even this bought nothing permanent. The Pasha of Tripoli broke the treaty in three years and a half, demanding $225,000 with $25,000 annually, and on refusal declared war, 14 May 1801. A squadron under Commodore Dale was sent to the Mediterranean and blockaded Tripoli, also forcing Algiers and Tunis to think better of their threatened alliance with it and to renew their treaties. Morris succeeded him, but was soon recalled. Preble, who took his place, 1803–04, forced Morocco, which had joined Tripoli, to withdraw from the alliance and renew its treaties; carried on a vigorous blockade; and bombarded Tripoli five times. Barron succeeded Preble, but in the middle of 1805 turned over the command to Rodgers, who at once prepared for a grand bombardment and assault. The scale was turned, however, by William Eaton (q.v.), who took up the cause of the Pasha's elder brother, Hamet Caramelli, driven from the throne some years before, organized at Alexandria a singular rabble of cosmopolites, and after a desperate six weeks' march across the desert, captured, with the aid of the navy, the seaport of Derne in Barca, several hundred miles east of Tripoli. The Pasha feared an insurrection as well as Rodgers' attack; and hastily signed on 3 June 1805, with Tobias Lear, United States consul-general at Algiers, who had come to Tripoli on purpose, a treaty by which the United States paid $60,000 ransom for the prisoners, left Hamet's supporters to the Pasha's vengeance and Hamet himself to beg the United States for a pension, and allowed the Pasha four years to deliver up Hamet's wife and children. The need and honor of this abject surrender of our government belongs to historical polemics. The embargo of 1807 prevented further trouble for some years by annihilating our commerce; but after its removal in 1810 the depredations were renewed, and in 1812 Algiers was ready for more gratifications. The Dey had received from us $378,363, but made out a case for $27,000 arrears, forced the United States consul to borrow it at usurious rates, and then, ordering him out of the country, declared war. The War of 1812, however, having denuded the Mediterranean of our trading-vessels, he captured only one brig and 11 persons; and after the war our naval force under Decatur was turned against Algiers. He found its entire fleet at sea; captured two and cut off the rest from port; entered the city 30 June 1815, 41 days after sailing; and forced the Dey to sign within three hours, without gift or present, on pain of having his city destroyed and his fleet captured, a treaty abolishing all tribute or presents of any sort thereafter from the United States, delivering up all his captives and agreeing that henceforth prisoners of war should not be made slaves, and paying indemnity for the captured brig. Tunis and Tripoli having allowed English ships to seize American prizes in their harbors, Decatur proceeded to both places and forced their rulers to make similar treaties, pay indemnities and release all their Christian prisoners of whatever nations. This magnificent action of the United States induced the English government to take similar steps the next year, but Tunis and Tripoli did not abandon piracy till 1819, and Algiers was not finally reduced till 1829 by France. It was the United States which first lifted this incubus of "Algerine" (as the entire system was compendiously called) piracy and slavery from the Christian world. Consult Schuyler, E., 'American Diplomacy' (London 1886); Adams, H., 'History of the United States,' Vols. I, II, IX (1889–90); Felton, C., 'Life of Eaton,' in Sparks, 'American Biography'; Lane-Poole, S. E., 'The Story of the Barbary Corsairs' (New York 1896). See TREATIES; UNITED STATES — DIPLOMACY OF THE.

**BARBASTRO**, bär-bä'strō, Spain, city of Aragon, 30 miles east-southeast of Huesca. The city has straight, well-made and paved streets, a cathedral with paintings by Galeran, parish church, college, Latin and three other schools, town-house, session-house, ecclesiastical courthouse, extensive hospital, two prisons, several convents with churches attached, two palaces, a theatre and bull-ring. It also possesses philosophical, agricultural, commercial and other literary and beneficent associations. The manufactures of Barbastro have greatly declined, consisting only of hats, hardware, cutlery, shoes and ropes; while a little trade is carried on in cattle, horses and mules. It is

the terminus of a branch railway line with a junction at Selgna, 12½ miles distant. Pop. about 7,500.

**BARBAULD, Anna Letitia,** English writer, daughter of the Rev. John Aikin: b. Kibworth, Leicestershire, 20 June 1743; d. 9 March 1825. Her earliest production was a small volume of miscellaneous poems, printed in 1773. This was succeeded in the same year by a collection of pieces in prose, published in conjunction with her brother. In 1774 she married the Rev. Rochemont Barbauld. Her 'Early Lessons and Hymns for Children,' and various essays and poems, have secured for her a permanent reputation. In 1812 appeared the last of her separate publications, entitled 'Eighteen Hundred and Eleven,' a poem of considerable merit; previous to which she had edited a collection of English novels, with critical and biographical notices. A similar selection followed from the best British essayists of the reign of Anne, and another from Richardson's manuscript correspondence, with a memoir and critical essay on his life and writings. She will be longest remembered by her beautiful and much-quoted lyric beginning: "Life, we have been long together." Consult Aikin, 'Works of A. L. Barbauld'; Ellis's, 'Life and Letters of Mrs. Barbauld' (1874); Ritchie, Mrs. Thackeray, 'Book of Sibyls' (1883).

**BARBAZAN,** bär-bā-zŏn, **Arnauld Guilhem, Sire de,** French captain, distinguished by Charles VI with the title of "Chevalier Sans Reproche," and by Charles VIII with that of "Restaurateur du Royaume et de la Couronne de France": b. about the end of the 14th century; killed at Bullegneville 1432. He earned the former of his titles, while yet young, by his successful defense of the national honor in a combat fought in 1404 between six French and six English knights, before the Castle of Montendre; and the latter designation he acquired by his extraordinary exertions on the side of the Dauphin, at a time when the cause of native royalty, powerless in presence of the Anglo-Burgundian league, boasted few adherents.

**BARBE-MARBOIS,** bär-bā-mär-bwä, **François, Marquis de,** French statesman: b. Metz, 3 Jan. 1745; d. 14 Jan. 1837. After fulfilling diplomatic offices at several German courts he was sent to the United States as consul-general of France. He organized all the French consulates in this country, in which he resided 10 years, and married the daughter of William Moore, governor of Pennsylvania. In 1785 he was appointed by Louis XVI superintendent of Saint Domingo, and introduced many reforms into the administration of justice and of finance in that island. He returned to France in 1790 and was again employed in German diplomacy. During the excitement of the Revolution he was exiled to Guiana as a friend of royalty, but being recalled in 1801 he was made director of the treasury, a title which he soon exchanged for that of minister. In 1803 he was appointed to cede Louisiana to the United States for $10,000,000, but had the skill to obtain the price of $16,000,000, a piece of diplomacy for which he was liberally rewarded by Napoleon. In 1813 he entered the Senate, and the next year voted for the forfeiture of the Emperor and the re-establishment of the Bourbon dynasty. He was well received by Louis XVIII, appointed a peer of France and honorary counsellor of the university, and confirmed in the office of the first president of the court of accounts, which he had formerly held. He was an object of the indignation of Napoleon after his return to France from Elba, and was ordered to leave Paris. He resumed his offices after the return of the Bourbons, but, moderate in his principles, and an enemy of all reaction, he was not in harmony with the majority of those with whom he associated; and in the Chamber of Peers he succeeded with difficulty in effecting the substitution of banishment for death as a penalty for political offenders. After the revolution of July he exercised the same adulation and took the same oaths of fidelity to Louis Philippe which he had formerly given to Napoleon and the Bourbon princes. The desire to die first president, which had been the motive of all his flexibility, proved at last a vain one, and in 1834, he was succeeded in his office, and as a consolation received the portrait of the King, accompanied by an autograph letter. His numerous works contain curious details concerning Saint Domingo, Louisiana and Guiana, which he studied in his exile, and he wrote also upon the treason of Arnold.

**BARBECUE,** a large gathering of people, generally in the open air, for a social entertainment or a political rally, the leading feature of which is the roasting of animals whole to furnish the members of the party with food. The word is said to have been employed in Virginia prior to 1700, and the institution of the barbecue is of Southern origin.

**BARBEL** (*Barbus*), a genus of freshwater abdominal malacapterygious fishes, of the family *Cyprinidæ*, or carps, distinguished by the shortness of the dorsal and anal fins, a strong spine replacing the second or third ray of the dorsal, and four fleshy filaments growing from the lips, two at the nose and one at each corner of the mouth, and forming the kind of beard to which the genus owes its name. Of the several species, generally named after the country or river where they are found, the European one, common in most of the rivers of its temperate climates, and hence called *B. vulgaris*, is most deserving of notice. Its average length is from 12 to 18 inches, but individuals have been taken measuring three feet and weighing from 15 to 18 pounds. The head is smooth and oblong, and the upper jaw is much longer than the lower. Its dorsal spine, which is strong and serrated, often inflicts severe wounds on the fishermen and damages their nets. It lives on small fishes, and also on aquatic plants, worms and insects, which it obtains by boring with its barbels into the banks of the stream and turning up the loose soil. Its flesh is very coarse and unpalatable, and at the time of spawning, the roe is dangerous to eat. Another species, common in the Nile, is described as weighing upward of 70 pounds, and has a flesh which is fine, delicate and well-flavored. When caught, the fisherman puts an iron through its jaw and fastens it by a short cord to the bank of the river, where it remains alive till required.

**BARBER, Edwin Atlee,** American archæologist: b. Baltimore, Md., 13 Aug. 1851. He was graduated at Williston Seminary in 1869, attended Lafayette College 1869–72, afterward received the degrees of A.M. and Ph.D., and was assistant naturalist in the United States Geological Survey in 1874–75. Director of the Pennsylvania Museum, Philadelphia, since 1901. His writings include a large number of magazine articles: 'Genealogies of the Barber and Atlee Families'; 'Pottery and Porcelain of the United States' (1895, 1902, 1909); 'Anglo-American Pottery' (1899–1901); 'American Glassware, Old and New' (1900); 'Tulip Ware of the Pennsylvania-German Potters' (1903); 'Marks of American Potters' (1904); 'Artificial Soft Paste Porcelain' (1907); 'Salt Glazed Stoneware' (1907); 'Tin Enameled Pottery' (1907); 'Lead Glazed Pottery' (1908); 'The Majolica of Mexico' (1908); 'Hard Paste Porcelain' (Oriental), (1910); 'The Ceramic Collectors' Glossary' (1914); 'Spanish Porcelains and Terra Cottas' (1915); 'Hispano-Moresque Pottery' (1915). Member of the American Philosophical and many other learned societies.

**BARBER, Francis,** American soldier: b. Princeton, N. J., 1751; d. Newburg, N. Y., 11 Feb. 1783. He was graduated at Princeton in 1767, and became principal of a school in Elizabethtown, where Alexander Hamilton was one of his pupils. He was successively major and lieutenant-colonel of the 3d New Jersey artillery, and assistant inspector-general under Baron Steuben. He took part in the battles of Trenton, Princeton, Brandywine and Germantown, and was severely wounded at Monmouth and in Sullivan's Indian expedition, 1779. He was of the greatest service to Washington in securing intelligence of the enemy's movements and in putting down the mutiny of New Jersey and Pennsylvania troops. In 1781 he commanded a battalion of infantry in Lafayette's Virginia campaign, and was present at Yorktown. He was killed by a falling tree at the close of the war.

**BARBER,** one who shaves beards and dresses hair. The occupation of barber is an institution of civilized life, and is only known among those nations that have made a certain progress in civilization. It is referred to by the prophet Ezekiel: "And thou, son of man, take thee a barber's razor, and cause it to pass upon thine head and upon thy beard." (Ezek. v, 1). We do not read of a barber at Rome till about the year 454 of the city; but there, as elsewhere, when once introduced, they became men of great notoriety, and their shops were the resort of all the loungers and newsmongers in the city. Hence they are alluded to by Horace as most accurately informed in all the minute history, both of families and of the state. But in early times the operations of the barber were not confined, as now, to shaving, hair-dressing and the making of wigs; but included the dressing of wounds, blood-letting and other surgical operations. It seems that in all countries the art of surgery and the art of shaving went hand in hand. The title of barber-chirurgeon, or barber-surgeon, was generally applied to barbers. The barbers of London were first incorporated by Edward IV in 1461, and at that time were the only persons who practised surgery. The barbers and the surgeons were separated, and made two distinct corporations — in France, in the time of Louis XIV, and in England in 1745. The sign of the barber-chirurgeon consisted of a striped pole from which was suspended a basin; the fillet round the pole indicating the riband or bandage twisted round the arm previous to blood-letting, and the basin the vessel for receiving the blood. This sign has been generally retained by the modern barber. In the United States, however, it is only occasionally that the basin may be seen hanging at the door of a barber's shop. The character of the barber is amusingly illustrated in one of the tales of the 'Arabian Nights Entertainments,' and has been immortalized by Beaumarchais, Mozart and Rossini, under the name of 'Figaro.'

**BARBER-FISH.** See SURGEON-FISH.

**BARBER OF SEVILLE, The** (Le Barbier de Séville), one of the wittiest of all dramas and most mordant of satirical solvents, was written by Beaumarchais under irritation at speculative misadventures in American trade, in 1772, ready for the stage in 1773 and, after two years of prohibition and intrigue, first acted in February 1775. In its first form it was overloaded with allusions to his personal affairs and was ill-received. Revised on the instant it won on the second night a great success. Several passages then suppressed, because they had been hissed, when inserted nine years later in 'The Marriage of Figaro,' were received with applause. The second title of the Barber, 'The Futile Precaution' points to Fatouville's 'La-Précaution inutile' (1692) as the source of its plot. Something was borrowed also from Sédaine's 'On ne s'avise jamais de tout.' But the ex-valet Figaro, the central figure, is Beaumarchais' sole creation, a marvelous and half-autobiographic combination of gaiety and philosophy, disillusioned shrewdness, deep reflection and lambent wit. The guardian who wishes to marry his ward is a stock figure of old comedy. But Bartholo is no commonplace old man nor Rosine the conventional ingénue. Duped Bartholo may be, but he is no unworthy antagonist of the young lover Almaviva and counters well on the devices of Figaro from point to point so that the interest rises steadily to the very dénouement. The dialogue throughout sparkles with overflowing wit, unexpected turns of phrase, words of double intent, topsy-turvy application of proverbial wisdom and even quite superfluous jests. The play is still popular in France and in the version given it by Rossini in his opera, 'Il Barbiere di Seviglia' (1816), has an international currency. The best edition of 'Le Barbier de Séville' is in 'Théâtre de Beaumarchais,' edited by d'Heyli and Marescot. For its history, autobiographical elements in it and contemporary opinion of it consult Loménie, 'Beaumarchais and his Times' (Vol. 2, pp. 233 f.). For the character of Figaro see Brunetiére, 'Époques du théâtre' (pp. 297f.), and Lintilhac, 'Beaumarchais.' A modern type of Figaro may be seen in Augier's 'Fils de Giboyer' (trans. by A. B. Myrick, New York 1905). See MARRIAGE OF FIGARO, THE.

BENJAMIN W. WELLS.

**BARBER OF SEVILLE,** opera bouffe in two acts by Gioacchimo Rossini (libretto by Sterbini, founded on Beaumarchais' celebrated

play). First produced in Rome 5 Feb. 1816. The work, destined to become one of the most popular in operatic repertory, was at first a dismal failure, due largely to popular resentment at the use of a subject, which had already been turned to account by other composers, especially Paisiello, whose setting had been a favorite with the Italian opera public. It was not long, however, before the tables were turned and Paisiello's 'Barbiere' was forever barred, in favor of the newcomer. Authorities differ as to the length of time in which the music was written. In any event, the period was not more than three weeks. The fact is significant of Rossini's immense facility of invention. It is said that when one of his contemporaries was told that Rossini had written the music in 13 days, he replied, with a twinkle in his eye: "It is quite possible; he is so lazy."

The Barber is full of irresistible verve, the music, piquant and graceful, rollicking and glittering in turn. The story is a sort of prologue to that of Mozart's 'Figaro,' but, musically, there is little in common between them. Rossini was concerned merely with writing a comic opera which would amuse and charm the senses and he succeeded to perfection. There are 20 distinct musical numbers connected by recitative in the style so common to Italian opera of that period — "*recitativo secco*" or dry recitative, as it is called. It approximates speech more nearly than song, but is constantly about to break into music. Its monotonous character is undeniable and it has largely disappeared from operatic writing, supplanted by the more musical song-speech of the modern music drama. Among the individual musical numbers, attention may be focussed on Figaro's buffo aria, *Largo al factotum*, celebrated the world over, Rosina's cavatina, *Una voce poco fa*, which has done service for most of the great prima donnas of the 19th century and the "calumny" aria of Don Basilio. For the famous music lesson scene, Rossini wrote a concerted number, but it has been lost — providentially, from the viewpoint of the prima donna, who has thus been able to introduce a show piece of her own choice and so at once to pique the curiosity and astonish the ears of her audience.

The Barber remains in the active repertory of most of the opera companies and bears well its century of life. The first performance in America took place in New York on 17 May 1819, in an English translation under the direction of Thomas Phillips; and in 1825 it was produced in the authentic Italian version by Manuel Garcia's Italian Opera Company, which introduced many of the Italian operas to the American public. Adelina Patti was an unforgettable Rosina, while, in more recent years, Marcella Sembrich found the rôle a grateful one.

LEWIS M. ISAACS.

**BARBER POET, The.** See JASMIN, JACQUES.

**BARBERINI,** bär-bär-rē'ne, celebrated Florentine family which became powerful through Cardinal Maffeo Barberini, who was elected Pope in 1623 as Urban VIII. Few of the Popes have carried nepotism so far as Urban, who, during his reign of 21 years, seemed intent on only one object, the aggrandizement of his three nephews. Two of them were appointed cardinals, and the third became Prince of Palestrina. The principality of Palestrina continued in the possession of the Colonna branch of the family until 1889, becoming extinct in the male line in that year.

**BARBERINI FAUN,** a famous piece of Greek sculpture, so called from its having once been in the possession of the Roman family of Barberini. It is now in the Glyptothek at Munich.

**BARBERINI PALACE,** the residence of the Barberini family in Rome, begun by Pope Urban VIII, its most distinguished member, but not finished till 1640. It contains a famous picture-gallery and a library with over 10,000 volumes and 10,000 manuscripts.

**BARBERRY** (*Berberis*), a genus of about 175 species of shrubs of the family *Berberidaceæ*, natives of temperate climates. The yellow flowers are succeeded by red, dark-blue or black fruit which in some species is used for making jellies of beautiful color and distinct flavor; that of some other species is dried and used like raisins. The yellow roots and sometimes the stems of several species are used in dyeing, and the bark of some in tanning. Many of the species are used for ornament and for hedges, but in wheat-growing sections they should not be planted, because they are host-plants for the æcidium stage of wheat-rust (*Puccinia graminis*), which, however, has been known to develop in localities remote from barberry bushes. *B. vulgaris* and its varieties and *B. thunbergii* (considered by some botanists a form of *vulgaris*) are probably the most common species planted in America. The former, an American species, is a rather erect shrub about 10 feet tall, with large leaves and racemes of flowers which are followed by red fruits that persist during the winter and even well into the second summer; the latter, a Japanese species, is a low, spreading, graceful shrub with dainty little leaves which become brilliant red in autumn, and with solitary yellow flowers followed by orange-red persistent fruits. The stamens, which in many if not all species are sensitive, spring up when touched. Propagation is usually effected by means of seeds or cuttings of green wood, but sometimes by grafts and layers. For description of species cultivated for ornament in America, consult Bailey, 'Standard Cyclopedia of Horticulture' (1914).

**BARBERRY BLIGHT or RUST.** See RUSTS.

**BARBERS' ITCH.** Two distinct diseases of the skin are known by this name — one of a parasitic nature, the other not parasitic. In the latter there is an inflammation of the hair follicles characterized by the formation of papules and pustules pierced by hairs. It affects the hairy part of the face and runs a chronic course. It is more inclined to affect the upper lip and upper parts of the face. The more important disease is the *Tinea barbæ*, or parasitic disease. Here the hair follicles are infected by a fungus, the *trichophyton*. It is a form of ringworm of the beard. It affects the lower part of the face and neck, causing itching, scaly eruptions that secret a thick

mucus and spread out ring-like from the centre. The disease is always contracted from another person or sometimes from lower animals. Uncleanly barbers' implements are the chief agents in its spread. In the early stages — the parasitic form — it is readily curable, but in the chronic stages it may prove very difficult to treat successfully.

**BARBERTON,** Ohio, city in Summit County, seven miles south from Akron, and 39 miles from Cleveland; on the Erie, the Baltimore & Ohio and the Pennsylvania railroads. The town was founded in 1893 by O. C. Barber, president of the Diamond Match Company, whose works are located here. It is known as the "magic city," having acquired a population of 10,000 in about 18 years. It is a progressive manufacturing centre, having sewer-pipe mills, rubber works, potteries, iron works, paint mills, salt wells, strawboard works and other industries. The United States census of manufactures for 1914 reported 34 industrial establishments of factory grade, employing 3,706 persons, of whom 3,110 were wage earners, receiving $1,734,000 annually in wages. The capital invested aggregated $14,624,000, and the value of the year's output was $8,842,000; of this, $4,737,000 was the value added by manufacture. The city is governed by a mayor and city council elected biennially. Pop. 12,000.

**BARBÈS, Armand,** bärbĕs', är-mŏṅ', French politician and revolutionist: b. island of Guadaloupe 1810; d. 1870. At an early age he was taken to France, and in 1830 went to Paris to attend the law classes, where he had an opportunity of manifesting his political opinions at that period of public excitement. During the whole reign of Louis Philippe he was constantly engaged in conspiracies. In consequence of an unsuccessful attempt to overthrow the government he was condemned to death, a sentence which was commuted to perpetual confinement. The revolution of 1848 restored Barbès to liberty. He then founded a club, which took his name, in which the doctrines of socialism were superseded by republicanism. After the insurrection of May 1849, Barbès was sentenced to deportation. In 1854 he was again set at liberty, and left France, a voluntary exile.

**BARBET,** any of the tropical South American birds of the families *Capitonidæ* and *Bucconidæ,* both of which are characterized by prominent bristles about the mouth, which assist them in catching flying insects. The birds of the former family are more usually called "thickheads," and those of the latter "puff-birds" (qq.v.).

**BARBETTE,** bär-bĕt', the platform or elevation of earth behind the breastwork of a fortification or an intrenchment, from which artillery may be fired over the parapet. An ascent leads from the interior of the intrenchment to the barbette. When the garrison has much heavy ordnance, or the enemy has opened his trenches, or when it is determined to cannonade the intrenchments of a given point,— as, for example, a bridge or pass,— and the direction of the cannon is not to be materially changed, it is usual, instead of making a barbette, to cut embrasures in the parapet; on the contrary, firing from the barbette is expedient when one expects to be attacked only by infantry, or wishes to cannonade the whole surrounding country. See FORTIFICATION.

**BARBETTE GUN.** See ORDNANCE.

**BARBETTE TURRET.** See TURRET.

**BARBEY D'AUREVILLY,** bär-bā-dō-rĕ-vē-yę, **Jules,** French critic and novelist: b. Saint-Saveur-le-Vicomte, Manche, 2 Nov. 1808; d. Paris, 24 April 1889. As a contributor to the *Pays* in Paris he created a sensation by the unreserved tone and peculiar style of his literary criticisms. He wrote 'On Dandyism and G. Brummel' (1845); 'The Prophets of the Past' (1851); 'Gœthe and Diderot' (1880); 'Polemics of Yesterday' (1889); 'Nineteenth Century: The Works and the Men' (1861–92). Of his novels the best are 'The Bewitched' (1854); and 'The Chevalier des Touches' (1864).

**BARBIANO,** bär-byä'nō, **Abrechtda,** an Italian military officer, who formed the first regular company of Italian troops organized to resist foreign mercenaries, about 1379. This organization, named the "Company of Saint George," proved to be an admirable school, as from its ranks sprang many future officers of renown. He became grand constable of Naples in 1384, and died in 1409.

**BARBICAN.** See BARBACAN.

**BARBIÉ DU BOCAGE,** bär-byā-dü-bō-kazh, **Jean Denis,** distinguished French geographer: b. Paris 1760; d. there 1825. He laid the foundation of his fame in 1788 by the publication of his beautiful Atlas to the 'Voyage du Jeune Anacharsis,' and was appointed in 1792 keeper of the maps of the Royal Library, and in 1809 professor at the Sorbonne. In 1821 he founded the Geographical Society, of which he became president. He was also a member of the Institute. His maps and plans to the 'Voyage pittoresque en Grèce, de Choiseul Gouffier,' and to the works of Thucydides, Xenophon, etc., exhibit much erudition. He also prepared many modern maps, and published excellent dissertations in various scientific collections. Although the progress of time has necessarily deprived much of his work of its original value, his labors have not the less given a decided stimulus to the progress of science.

**BARBIER,** bär-byā, **Antoine Alexandre,** French bibliographer: b. Coulommiers 1765; d. 1825. In 1794 he went to Paris, where he was chosen a member of the committee appointed to collect works of literature and art existing in the monasteries, which were then suppressed. This was the cause of his being appointed in 1798 keeper of the library of the Conseil d'État, collected by himself, and when it was transported to Fontainebleau in 1807 Napoleon appointed him his librarian. On the return of the King he had the care of his private library. His excellent 'Catalogue de la Bibliothèque du Conseil d'État' (1801–03) is now very rare. His 'Dictionnaire des ouvrages anonymes et pseudonymes' (1806–09, 4 vols., 3d ed., 1824), is on account of its plan, its accuracy and its fullness (at least in respect to French literature), one of the best works in this branch of bibliography.

**BARBIER, Henri Auguste,** French poet: b. Paris, 29 April 1805; d. Nice, 12 Feb. 1882. Having written an historical novel (1830) with Royer, depicting French mediæval society, he

entered his proper sphere, that of poetical satire, in which he obtained a brilliant success with 'The Iambes' (1831); (31st ed., 1882), a series of poignant satires, political and social, lashing the moral depravity of the higher classes,— notably the ignoble scramble for office under the new government, the subject of 'The Quarry,' the most famous among these satires. His next works, 'Lamentation' (1833), bewailing the misfortunes of Italy, and 'Lazarus' (1837), in which he describes the misery of the English and Irish laborer, show a considerable falling off; and in those that followed, the poet of 'The Iambes' is scarcely to be recognized. He was elected to the Academy in 1869.

**BARBIER, Paul Jules,** a prolific French dramatist: b. Paris, 8 March 1825; d. 1901. Having won success with his first effort, 'A Poet' (1847), a drama in verse, he produced 'The Shades of Molière' (1847); 'André Chenier' (1849); 'Willy Nilly,' a comedy (1849); and thereafter in collaboration, mostly with Michel Carré, a number of dramas and vaudevilles, also countless librettos for comic operas. After the war of 1870–71 he published 'The Sharpshooter, War Songs' (1871), a collection of patriotic poems; and later two other volumes of lyrics, 'The Sheaf' (1882) and 'Faded Flowers' (1890); besides 'Plays in Verse' (2 vols., 1879).

**BARBIER DE SEVILLE.** See BARBER OF SEVILLE.

**BARBIZON,** bär-bę-zôn, France, a village on the skirts of the forest of Fontainebleau, in the department of Seine-et-Marne. Its picturesque situation on the edge of the forest and association have made it a favorite haunt of artists and tourists which has given its name to a school of French landscape painters.

**BARBIZON, The Painters of,** a group of French painters of animal, landscape and peasant subjects who settled in the village of Barbizon about 1844. While often referred to as the Barbizon school, they did not form a school in the usual sense, but were attracted together by similar aims and principles. These principles may be reduced to the one that each painting be studied directly from nature and express a mood or sentiment of the artist. The result was a grasp on truth and life with a poetic character that gave their work permanency and charm. They are of the Romantic school as applied to the landscape. The distinctive note of the school appears in the work of Rousseau and Millet, each of whom made his home in Barbizon. Corot, Diaz, Dupré, Daubigny and Troyon were members of the group. (See articles on these artists). Recognition of their merit came slowly as a result of the conflicts that existed between the classic and romantic schools in the first half of the 19th century. The painters of Barbizon are among the most important in the history of landscape painting, into which they infused new life; their influence was tremendous not only in Europe but in America. They are well represented in American galleries, such as the Metropolitan Museum of Art, and the Vanderbilt collection, New York, and the Shaw collection of Boston. Consult La Farge, 'The Higher Life in Art' (New York 1908); Mollet, 'Painters of Barbizon' (London 1895); Muther, 'History of Modern Painting' (London 1907); Tomson, Arthur, 'Painters of Barbizon' (ib. 1908); Thompson, D. C., 'Painters of Barbizon' (ib. 1902); Van Dyke, 'Modern French Masters' (New York 1906).

**BARBOU,** bär'boo, the name of a celebrated French family of printers, the descendants of JOHN BARBOU, of Lyons, who lived in the 16th century. From his press issued the beautiful edition of the works of Clement Marot in 1539. His son, HUGH, removed from Lyons to Limoges, where, among other works, his celebrated edition of 'Cicero's Letters to Atticus' appeared in 1580. JOSEPH GERARD, a descendant of the same family, settled in Paris, and continued in 1755 the series of Latin classics in duodecimo,— rivals to the Elzevirs of an earlier date,— which had been begun in 1743, by Coustelier. This series of classics is much prized for its elegance and correctness.

**BARBOUR,** bär'bėr, **Erwin Hinckley,** American geologist: b. near Oxford, Ohio. He was assistant palæontologist in the United States Geological Survey in 1882–88; Stone professor of natural history and geology in Iowa College in 1889–91; became professor of geology in the University of Nebraska, and acting State geologist in 1891; and curator of the Nebraska State Museum since 1891. In 1893 he took charge of the annual Morrill geological expeditions, and since then he has also been engaged in the United States Geological and Hydrographic Surveys.

**BARBOUR, James,** American statesman: b. Orange County, Va., 10 June 1775; d. 8 June 1842. He was admitted to the Bar when 19 years old. He served in the Virginia legislature 1796–1812, becoming governor of the State in the latter year. Three years later he was elected to the United States Senate. He was Secretary of War 1825–27, and Minister to England 1828–29. In politics he was strongly anti-Democratic. He was chairman of the convention which nominated Harrison and Tyler for the presidency and vice-presidency.

**BARBOUR, John,** Scottish poet, of whose life but little is known. He is supposed to have been born about 1316; was educated at Oxford and Paris; he was archdeacon of Aberdeen from 1357 until his death. He traveled in England in 1357 and in 1368 went to France for scholarly purposes. He was a clerk in the household of Robert II who in 1378 gave him a perpetual annuity of 20s, increased in 1388 to £10 a year. He died in Aberdeen, 13 March 1395. His great epic, 'The Bruce,' tells the story of Robert Bruce and the battle of Bannockburn. It was written in 1375 and brought him favor from the King. Its style is clear and pure and compares favorably with contemporary English poets except Chaucer. It is important also as a record of the manners and customs of the time. First printed in Edinburgh in 1571; best modern edition by Skeat (Early English Text Society, London 1870–89). He also wrote 'Legends of the Saints,' of 33,533 verses; the best modern edition is that by Metcalfe (Scottish Text Society, Edinburgh 1896); and a fragment on the Trojan War. Consult Horstmann, 'Barbour's Legendensammlung, nebst den Fragmenten seines Trojanenkrieges' (Heilbronn 1882); Lang, Andrew, 'History of Scotland' (1900).

**BARBOUR, Philip Pendleton,** American jurist: b. Orange County, Va., 25 May 1783; d. 24 Feb. 1841. He studied law at William and Mary College and began to practise in 1802. He led the war party in the Virginia legislature 1812-14, when he was elected to Congress, becoming speaker of the House in 1821. Four years later he was appointed a judge in his native State, returning to Congress in 1827; but later resigning through ill-health. He was subsequently appointed a Federal judge, and in 1836 was promoted to the Supreme Court of the United States. In politics he was a Democrat.

**BARBOUR, Ralph Henry,** American author: b. Cambridge, Mass., 13 Nov. 1870. He was educated at the Highland Military Academy of Worcester, Mass. He is well known as a contributor of verse and short stories to magazines under the pen name of «Richard Stillman Powell,» but has published a number of entertaining boy's stories under his own name. His publications include 'The Halfback' (1899); 'For the Honor of the School' (1900); 'Captain of the Crew' (1901); 'Behind the Line' (1902); 'The Land of Joy' (1903); 'Weatherby's Inning' (1903); 'The Book of School and College Sports' (1904); 'Four in Camp' (1905); 'Four Afoot' (1906); 'Tom, Dick and Harriet' (1907); 'Forward Pass' (1908); 'Double Play' (1909); 'The Golden Heart' (1910); 'The House in the Hedge' (1911); 'The Harbor of Love' (1912); 'The Junior Trophy' (1913); 'Partners Three' (1913).

**BARBOURSVILLE,** Ky., town and county-seat of Knox County, 185 miles southeast of Louisville, on the Cumberland River, and the Louisville & N. Railroad. The chief industries are connected with mining, lumbering and oil wells. Pop. 2,000.

**BARBOURSVILLE,** W. Va., town of Cabell County, situated on the Guyandotte River, and on the Chesapeake & O. and Guyandotte Valley railroads, nine miles east of Huntington. It is the seat of Barboursville College, a Methodist institution, and of the Kuhn Memorial Hospital, and is of historic interest as the scene of a Federal victory in the Civil War, 13 July 1861. Pop. about 900.

**BARBOX BROTHERS,** a short story by Dickens, with a second part known as 'Barbox Brothers & Co.'

**BARBUDA,** bär-boo'dą, British West Indies, one of the Leeward Islands, 25 miles north of Antigua. It is of coral formation, has a fertile soil, and produces tobacco, cotton, corn and pepper. There are forts on the west side of the island, and a roadstead, but no port. The population is almost entirely negroes, and numbers about 1,000.

**BARBUDO,** bär-boo'dō, or **BARBU,** Spanish names in the West Indian region for the strange fishes of the family *Polynemidæ*. See MANGO-FISH.

**BARBY,** Prussia, a town in the province of Saxony, on the left bank of the Elbe, 16 miles south-southeast of Magdeburg. It is well built and has an old castle, and manufactures of linen and cotton, soap-works, breweries and distilleries. Pop. 5,292.

**BARCA,** north Africa, an Italian possession, part of Libia Italiana, lying east of Tripoli, about 500 miles long by 400 miles wide. It forms a portion of the ancient Cyrenaica, in its widest sense, where the Greeks had two flourishing colonies. The Greeks were followed in possession of the country by the Romans, and the monuments of both peoples remain in the ruins of their cities. The sides and summits of the hills in the east and north are fertile, and yield abundant crops and excellent pasture. The loftiest heights do not exceed 1,800 feet. Flowering shrubs occur in great variety, including, among others, roses, laurestinas, honeysuckles, etc. The Bedouin inhabitants have numerous camels and other cattle, constituting their principal wealth. Among beasts of prey the most common are hyenas and jackals; noxious insects also abound. There are hardly any permanent streams, most of the water-courses being of the nature of mountain torrents, which lose themselves in the sands of the Libyan Desert. The eastern portion, however, is tolerably well supplied with water by rains and springs. The chief exports of the country consist of grain and cattle, along with ostrich feathers and ivory, brought by caravans from the interior. The sponge fisheries are also important. The chief imports are textiles and drugs. Next to Bengazi, the capital, the seaport of Derna is the chief town. Barca used to form a dependency of Tripoli, later a separate province under Turkish dominion. By the Treaty of Quchy, signed by the Turkish and Italian delegates 18 Oct. 1912, it was formally recognized as a dependency of Italy; it forms with Tripoli the new Italian colony Libya. The population is variously estimated, but probably does not much exceed 325,000.

**BARCAROLLE,** bär'ką-rōl, a song of the gondoliers at Venice, often composed by themselves, to some simple and pleasing melody, such as may be timed to the stroke of the oar. Such melodies are sometimes introduced into operas, and have been written for the piano.

**BARCELLONA,** bär-chĕl-lo'ną, Sicily, a town in the province of Messina, situated on the Longano River, 27 miles west of the town of Messina. It is noted for its sulphur baths which are frequented from May to September. The suburb of Pozzo di Gotto is separated from the main town by a small stream, the Fiume di Castro Reale, supposed to be the Longanus of antiquity. Oil, manna, wine and fruit are the most important products. There are fine forests on the near-by mountains. The chief commerce is in oil and fish. Pop. 26,172.

**BARCELONA,** bär-thē-lō'nȧ, Spain, the largest city and second seaport of Spain, 440 miles northeast of Madrid by rail (310 miles direct line). It is the capital of the province of the same name and of the military district of Catalonia, and is handsomely built, in the shape of a half-moon, on the coast of the Mediterranean, between the mouths of the Llobregat and the Besos, in the midst of a spacious fertile valley. It was, even in the Middle Ages, one of the principal commercial places on this sea. On the southwest lies the hill of Monjuich, with a fort which protects the harbor. Barcelona is divided into the old town, the streets of which, with one or two exceptions, notably the broad Rambla, are narrow and mediæval but always picturesque and animated;

and the new city, with wide streets and handsome modern houses. The walls of the old city have been converted into boulevards called rondas. In the suburbs are most of the factories. Its manufactures which are the most important in Spain include cottons, silks, woolens, machinery, iron castings, paper, glass, mathematical instruments chemicals, stoneware and soap. There are also dyeworks, tanneries, etc. Previous to the great war many of the articles needed in commercial production were imported. But as these sources of supply were closed, new industries sprang up; especially to be noted are those of bottle tops, electric wire and cable, enameled ironware, hardware, needles and buttons, galvanized iron and tinware, grindstones and crucibles, emery products, glass, inks, varnishes, glue, waterproof cloth, etc. New establishments also began making rubber articles, straw hats, shirts, neckties, furniture and toys. Forty-six new textile companies, manufacturing in silk, cotton and wool, have been (1916) begun since the war began, but principally in the knitted goods industries, for which not only the city but the whole district is noted. But perhaps the greatest growth has been in the line of chemical industries, to supply articles formerly imported from Germany. These include general chemical products, aniline dyes, drugs and essences, oils and soaps, alcohol, glucose and chemical fertilizers; as well as photographic papers and films, carbonic acid gas, liquid lye, cream of tartar and antiseptics. The local tanning industry increased largely owing to the war's demand for leathers, and 12 new tanneries were established to supply this trade. The importations of raw cotton into Barcelona for the campaign year 1915–16 was 396,788 bales, of which 314,855 came from the United States. While this supply was 98,744 bales less than the preceding year it was 5,722 bales more than the ante-war period, and for the United States an increase of 38,490 bales over Barcelona's purchases for the year just previous to the war. Of the total supply of cotton now (1916) reaching Barcelona 80 per cent is grown in the United States, 15 per cent in India and 5 per cent in Egypt. Agriculture and the growing of fruits and nuts showed a marked increase in 1915–16. The harbor is spacious, 305 acres and has an entrance 300 yards wide between two long piers. The entrance is protected by a large mole, which has been recently extended, and there is a large floating dry-dock. The exports consist largely of manufactured goods, wine and brandy, fruit, oil, cork, etc. The chief imports are coal, grain, cotton, hemp, foodstuffs, etc. In 1910 1,662 ships of 2,463,741 tons burden entered the harbor. The city contains a university founded in 1430, transferred to Cervera in 1714 and reopened here in 1837, now occupying a noble pile of buildings, completed in 1873. It has faculties of law, medicine, philosophy, natural sciences, mathematics and pharmacy, about 1,900 pupils and a library of 150,000 volumes. Barcelona also contains the archives of the kings of Aragon (nearly 4,000,000 documents), two museums, a palace of fine arts, school of architects and engineers, a foundling hospital, a general hospital, large enough to contain 3,000 sick persons, a deaf-and-dumb institution, a large arsenal, a cannon foundry, several large theatres, a bull ring seating 14,500 persons, and a fine Spanish Gothic cathedral dating from the 13th century. It is the seat of a Supreme Court, a bishop and the captain-general of Catalonia, and is altogether a beautiful and agreeable town, with various interesting features and highly picturesque surroundings. Electric lights and electric tramways have been introduced. Barcelona is said to have been founded by the Carthaginians in the 3d century B.C., and was an important city under the Romans, Goths and Moors. It was from the 9th till the 12th century governed by its own counts; but afterward by the marriage of Raymond IV with the daughter of Ramiro II, King of Aragon, it was united with that kingdom. In 1640 it withdrew, with all Catalonia, from the Spanish government; and submitted to the French Crown; in 1562 it submitted again to the Spanish government; in 1697 it was taken by the French, but restored to Spain at the Peace of Ryswick. In the War of the Spanish Succession Barcelona took the part of the Archduke Charles; but in 1714 was besieged by the troops of Philip V, under the command of the Duke of Berwick, and taken after an obstinate resistance. A strong citadel on the east side of the city was then erected to overawe the inhabitants, but was destroyed in 1845. On 16 Feb. 1809, Barcelona was taken by surprise by the French troops under General Duhesme, and remained in the power of the French till, in 1814, all their troops were recalled from Catalonia to defend their own country. In 1821 the yellow fever carried off 40,000 of the inhabitants. The city has been the scene of many serious and sanguinary revolts, particularly in 1832, 1836, 1840 and 1841. Latterly, industry and commerce have rapidly increased, the construction of railways contributing to this result. This city is regarded as the centre of anarchist movements in Spain. It is governed by a council elected for four years by all the citizens over 25 years of age, and presided over by an alcalde chosen by the members among their own number. Pop. 800,000.

**BARCELONA**, bär-shę-lō-na, Venezuela, the capital of a district and of the state of Bermúdez, near the mouth of the Neveri, 160 miles east of Caracas. The surrounding country is fertile, but the city is hot and unhealthy. Cattle, jerked beef, hides, indigo, cotton and cacao are the chief exports. The district, formerly a separate state, has since 1881 formed one of the divisions of the state of Bermúdez. The city was founded in 1634 by Juan Urpín, and during the long period of Spanish domination was known by the name of Nueva (New) Barcelona. Pop. about 13,000.

**BARCELONA, Bank of.** In its more modern sense, that is to say, an institution of deposit, loan, discount, domestic and foreign exchange, etc., open to the commercial public, the Bank of Barcelona must be regarded as the earliest of banks in the European world. As its operation had a bearing upon the affairs of America they possess especial interest. Primarily this relates to the *obrussa, obrysum, obrizo,* or test or "trial of the pyx." In Spain, by the ordinance of Valencia, made by King John, who conquered the kingdom of Aragon,

it is expressly provided that *reals* shall only be coined in Valencia, and that the mintners shall be supervised by two well-known citizens, so that no fraud shall be committed as to material or weight. (Grimaudet, 'Law of Payment,' p. 14). The coin referred to is the well-known Spanish *real de plata,* of eight to the dollar. It was lawful money in the United States down to 1853 and is still known to New York tradesmen as the "shilling" and throughout the Southern States and California as the "bit." The coinage supervision ordered by John of Aragon (father of Ferdinand, in whose reign Columbus discovered America), was afterward extended to the mint of Barcelona, where the supervisors of the *obrizo* were nominated by the bank and who thus furnished a secure basis for its extensive dealings in full weighted *reals,* and *reals de à ocho* (dollar pieces of eight reals) which it exchanged for the heterogeneous coins that flowed into its great commercial port from all parts of Europe.

From Barcelona King John's test of the coins, called in England "The Trial of the Pyx," was carried from Spain into the Spanish-American mints of Mexico and Peru and subsequently adopted by the United States government. This supervision and testing of the coins is still conducted in the American mints under a commission of civilians appointed by the Secretary of the Treasury.

Upon returning from his momentous voyage of discovery, Columbus appeared before King Ferdinand and Queen Isabella, then holding court at Barcelona, and there unfolded to his sovereigns and a brilliant throng of nobles and ecclesiastics the particulars of his wonderful achievement, exhibiting among other proofs a number of American natives, specimens of their field products and handiwork, and an attractive show of American gold nuggets.

The second voyage of Columbus, planned upon a royal scale, was especially prepared for the mining of gold, to carry out which object the King had recourse to two financial measures: First, immediate sequestration and sale of the property of heretics; second, a loan from the Bank of Barcelona. This loan furnishes an additional point of interest in that institution.

Among its various operations the bank received on deposit and disbursed the revenues, or part of them, of the four great ecclesiastico-military orders, and kept the accounts of about a dozen other orders of knighthood, like those of Calatrava, Saint James, Golden Fleece, Saint George, etc., some of which were ecclesiastical and others chivalrous. The royal treasure which during the reign of Henry IV of Castile was deposited in the castle of Segovia was afterward divided and removed by his step-sister, Queen Isabella, who deposited a portion of it in the Bank of Barcelona; because the Contador-General, or Superintendent of Finances, is known to have drawn for public disbursements upon that institution some of his warrants.

In 1480 Isabella, holding court at Toledo, had signed a decree which greatly affected the Bank of Barcelona. "To support the government of Castile, Henry IV had issued certain cedulas or certificates of annuities, assigned on the public rentes;" these by purchase had become the property of the nobles; who in turn had borrowed money on them from the bank. Isabella's decree denouncing and annulling these certificates — virtually an act of repudiation — was entrusted for execution to her confessor, Fernando de Talavera, who performed his office with such fidelity that it "saved" 30,000,000 maravedis annually to the Crown, or three-fourths of the entire revenue. (Prescott, 'Ferdinand and Isabella,' I, 299). Little more is heard of the bank after this despoilment. The treasure from America went no longer to Barcelona, but to Sevilla, where it was consigned to the Casa de Contratacion, or Board of Trade, and thence sent to the mints, of which there were five, each of them situated in a fortified city of the realm.

After the struggle to survive the depletion of its resources in 1480 the bank was hardly in a condition to weather the civil wars which attended the effort to wrest the crown from Juana and her son Charles. During this period of violence, the old bank, despairing of a return to peace and security, appears to have quietly discharged its obligations, wound up its affairs and honorably dissolved. For the history of other ancient banks see BYZANTUM, BANK OF; FUGGERS, BANK OF THE; GENOA, BANK OF; MEDICI, BANKS OF THE; TYRE, BANK OF; VENICE, BANK OF.

ALEXANDER DEL MAR.

**BARCHESTER TOWERS,** the second of Anthony Trollope's Chronicles of Barsetshire —'The Warden' (1855), 'Barchester Towers' (1857), 'Dr. Thorne' (1858), 'Framley Parsonage' (1861), 'The Small House at Allington' (1864), 'The Last Chronicle of Barset' (1867) — has been on the whole the most popular of Trollope's many novels and is thoroughly representative of all his best qualities. He took, he said, great delight in writing the story, as he did with the entire series, which, more than any other section of his work, is full both of gusto and the look of reality. Strangely enough, he had never lived in a cathedral city, except London, and had no intimate knowledge of clerical affairs; the idea of 'The Warden,' out of which all the other Barsetshire novels grew, came from a chance visit to Salisbury Close. But imagination so far took the place of experience that Trollope made the Chronicles, on the whole, the most notable representation in fiction of the lighter phases of English ecclesiastical life. The theme of 'Barchester Towers' is excellently adapted to Trollope's abilities. A new bishop of Barchester, coming into his diocese with tactless commotion, disturbs the deep calm long established there. The book is an account of the confusions and little wars he causes before the community once more settles back into peace. It would have been easy to be merely farcical, and Mr. Slope, the bishop's chaplain and the villain, comes near to farce; but for all the hurrying and scurrying about, for all the innocent intrigues and machinations which make up its plot, 'Barchester Towers' is very real. It particularly suggests Hawthorne's comment upon Trollope's books in general: "They precisely suit my taste, — solid and substantial, written on the strength of beef and through the inspiration of ale, and just as real as if some giant had hewn a great lump out of the

earth and put it under a glass case, with all its inhabitants going about their daily business, and not suspecting that they were being made a show of. And these books are just as English as a beefsteak.» 'Barchester Towers' is not a book of the spirit, for Trollope cared neither for mysteries nor for doctrines. It is essentially comic but essentially humane, without sharp satire or caricature. The plot is easy and credible, the good humor unflagging, the style, if not distinguished, yet clear; the setting and descriptions are always full of truth. The characters, however, give the book its memorable excellence. It is not only that they think, speak and act naturally. They are presented with a picturesqueness which never distorts them and a comic force which but adds to their verisimilitude. Such personages as Bertie Stanhope and Mrs. Proudie, the particular triumphs of this novel, may reasonably be mentioned with the immortals.

CARL VAN DOREN.

**BARCLAY, James,** Canadian preacher and educator: b. Paisley, Scotland, 19 June 1844. He was licensed by the Paisley Presbytery in 1870 and was minister of Saint Paul's Church, Montreal, from 1883 to 1910. While in Scotland he was frequently summoned to Balmoral to preach before Queen Victoria. He served through the Riel rebellion in the Northwest Territories, in 1885, and, besides being connected with various local institutions, has been president of Trafalgar Institute since its opening.

**BARCLAY, John,** Scottish poet: b. Pont-à-Mousson, France, 1582; d. 1621. He accompanied his father to England, where he was much noticed by James I, to whom he dedicated a politico-satirical romance, entitled 'Satyrikon,' in Latin, directed against the Jesuits. He wrote also several other works, among which is a singular romance, in elegant Latin, entitled 'Argenis,' which first appeared at Paris in 1621. It is an allegory, of a character similar to that of Satyrikon, and alludes to the political state of Europe, and especially France, during the league. Like the earlier work, it has been several times reprinted, and has also been translated into several of the modern languages, including English.

**BARCLAY, John,** Scottish clergyman: b. 1734; d. 1798. He was appointed assistant minister at Fettercairn, where he attracted wide attention through his novel doctrines. His advocacy of these led to his dismissal by the Presbytery, whose decision was upheld by the General Assembly. Barclay, however, continued to preach in Edinburgh, London and elsewhere. He founded the sect known by his name as Barclayites or Bereans — the latter name being taken from Acts xvii, 2. Barclay was the author of many tracts, pamphlets, etc., including 'Without Faith, Without God; or an Appeal to God Concerning His Own Existence' (1769). (See BEREANS). Consult 'Works of John Barclay,' edited with memoir (1852).

**BARCLAY, Robert,** a member of the Society of Friends: b. 23 Dec. 1648, at Gordonstown, in the county of Moray, of an ancient and honorable family; d. Ury, near Aberdeen, 3 Oct. 1690. The troubles of the country induced his father, Colonel Barclay, to send him to Paris, to be educated under the care of his uncle, who was principal of the Scots College in that capital, and who offered to make him his heir if he would become a convert to the Roman Catholic religion. Barclay refused and soon afterward his father sent for him to return home; and Colonel Barclay soon after becoming a Quaker, his son followed his example. Uniting all the advantages of solid learning to great natural abilities, he soon distinguished himself by his talents and zeal in the support of his new opinions. His first treatise in support of his adopted principles was published at Aberdeen in the year 1670, under the title of 'Truth Cleared of Calumnies,' etc. To propagate the doctrines, as well as to maintain the credit he had gained for his sect, he published, in 1675, a regular treatise, in order to explain and defend the system of the Quakers, which production was also very favorably received. These and similar labors involved him in controversies with the leading members of the University of Aberdeen, and others; but he was at the same time busy with his great work in Latin, 'An Apology for the True Christian Divinity, as the Same is Preached and Held Forth by the People in Scorn Called Quakers,' published at Amsterdam in 1676; an English translation appeared later in the same year. He traveled with William Penn and George Foxe through the greater part of England, Holland and Germany, to spread the opinions of the Quakers. He with other Quakers was imprisoned for five months at Ury because of his beliefs, but enjoyed the royal favor after his release, and in 1683 was made nominal governor of East Jersey under patent to the Society of Friends by the Duke of York. He never came to America, however. His estate remained in the possession of his descendants until 1854. His study remained as he left it for about two centuries when it was pulled down. The last of his productions, in defense of the theory of the Quakers, was a long Latin letter addressed, in 1676, to Adrian de Paets, 'On the Possibility and Necessity of an Inward and Immediate Revelation.' It was not published in England until 1686. With few exceptions, both partisans and opponents unite in the profession of great respect for the character and talents of Barclay. Besides the works already mentioned or alluded to, he wrote 'Catechism and Confession of Faith' (1673); 'Theses Theologiæ' (1675), of which the Apology was a defense; 'The Anarchy of Ranters' (1676); 'Universal Love Considered and Established Upon Its Right Foundation' (1677); and various replies to the most able opponents of his Apology. In 1692 a collected edition of his works appeared under the title 'Truth Triumphant.' It was republished in 1717–18. The 'Apology,' 'Catechism,' and 'Treatise on Church Government' (formerly called 'The Anarchy of the Ranters') have been issued by the Friends' Book Store (Philadelphia). Consult Armistead, William, 'Life of Robert Barclay' (Manchester 1850). See QUAKERS.

**BARCLAY, Robert Heriot,** British naval officer: b. Scotland 1785; d. 1837. He served with Nelson at Trafalgar, and lost an arm in the battle. He was sent out to command the British flotilla on the Lakes in 1813, and was defeated by Commodore Perry at the battle of Lake Erie on 10 September of that year. He

was subsequently court-martialed for the loss of his fleet, but was "fully and honorably acquitted."

**BARCLAY,** Sir **Thomas,** English jurist: b. Dunfermline, Scotland, 1853. He was educated at University College, London, and at the universities of London, Bonn, Paris and Jena. He went to Paris as a correspondent of the *Times* in 1876. He resigned this post in 1882 to devote himself exclusively to French law practice. Since 1900 he has identified himself with the active agitation for a good understanding with France. He visited the United States in 1903-04, and there stirred up agitation for an Anglo-American treaty of arbitration and conciliation. In 1905, at the invitation of the Associated Chambers of Germany, he visited Berlin and delivered addresses in favor of improving Anglo-German relations, and in the same year founded the International Brotherhood Alliance (Fraternitas Inter Gentes) for the encouragement of personal relations among the laboring classes of different countries. He was knighted in 1904, and became member of Parliament for Blackburn in 1910. He is an officer of the Legion of Honor and Knight of the Order of Leopold. He has published 'Problems of International Practice and Diplomacy' (1907); 'The Turco-Italian War and its Problems' (1912); 'Companies in France' (2d ed., 1899), and other law books, and the articles on international law in the 'Encyclopedia of the Law of England' and the 'Encyclopedia Britannica'; 'Thirty Years of Anglo-French Reminiscences' (1914); 'Law and Usage of War' (1914), and articles in *The Nineteenth Century,* etc.

**BARCLAY DE TOLLY, Michael, Prince,** distinguished Russian general: b. Livonia 1761; d. Insterburg, 14 May 1818. He entered the army at an early age, and his long service as a subordinate in campaigns against the Turks, Swedes and Poles laid the basis of a valuable experience, and served to develop his great natural capacity for command. In 1810 he was made Minister of War. He occupied this position in 1812, when Napoleon invaded Russia, but was soon appointed to the chief command of the army. He adopted a plan of retreat, which was soon seen to be a strict necessity, as the Russian army, officially estimated at more than 500,000, did not greatly exceed 100,000 men. In this difficult campaign Barclay proved no unworthy opponent of Napoleon himself. Notwithstanding, the Russians became impatient of a policy which seemed to show no active results, while jealousy of the Scottish extraction of Barclay and other causes completed his overthrow, and after the capture of Smolensk by the French he was superseded by Kutusoff. Serving under his successor, he commanded the right wing of the Russian army at the battle of Moscow, maintained his position, and covered the retreat of the rest of the army. After the battle of Bautzen, in 1813, at which he again distinguished himself, he was reappointed to the chief command, which he had soon after to resign to Prince Schwarzenberg. He forced the surrender of General Vandamme, who had been detached by Napoleon for some special operations, after the battle of Dresden, and took part in the decisive battle of Leipzig. On crossing the Rhine at the head of the Russian troops he issued a strict proclamation, forbidding all license on the part of his soldiers, and by the maintenance of an exact discipline he conciliated the French as much as possible to the invaders. He was made a field-marshal in Paris. In 1815 he commanded a mixed corps of continental troops. In this year he received from the Emperor the title of prince, and from Louis XVIII the badge of the Order of Military Merit. The Emperor Alexander caused a statue to be erected to him in one of the principal places of Saint Petersburg.

**BARCLAY SOUND,** an inlet on the west coast of Vancouver Island. It is some 35 miles in extent and the Alberni Canal continues it yet farther inland. It contains several islands and iron ore is found along its shores.

**BAR-COCHEBAS, BAR-COCHAB,** or **BAR KOKBA,** the name given to one Simeon, a celebrated Jewish impostor of the 2d century A.D., who pretended to be the Messiah. He called himself, or was called by his followers, Bar-Cochba, meaning Son of the Star, and applied to himself Balaam's prophecy, "There shall come a star out of Jacob," etc. He obtained the support of the celebrated Rabbi Akiba, and availing himself of the general dissatisfaction produced among the Jews by Hadrian's attempt to erect a temple to Jupiter on the site of the temple of Jerusalem, raised the standard of revolt, and soon mustered numerous followers. After carrying on a kind of guerilla warfare, he made himself master of Jerusalem about 132, and gained possession of about 50 fortified places. Hadrian, who had at first despised the insurrection, now saw the necessity of acting more vigorously, and sent to Britain for Julius Severus, one of his ablest generals, who, avoiding a general engagement, gradually made himself master of the different forts which the rebels possessed, and then, though not without great loss, took and destroyed Jerusalem. Barcochba retired to a mountain fortress, and perished in the assault of it by the Romans three years after, about 135. Consult Drenbourg, 'Histoire de la Palestine'; Schlattler, 'Geschichte Israels,' and article "Bar Kokba" in the 'Jewish Encyclopedia.'

**BARD, John,** American physician: b. near Philadelphia, February 1716; d. 30 March 1799. He was of a family which had fled from France upon the revocation of the edict of Nantes. He practised his profession a few years in Philadelphia, but removed to New York in 1746, where he rose to the first rank among physicians. In 1759, the citizens of New York were alarmed by the arrival of a ship, on board which a malignant fever was raging, and Dr. Bard was appointed to take measures to prevent the disease from spreading. He succeeded in keeping the pestilence within the limits of a temporary hospital, but to guard against similar dangers in future, at his suggestion, Bedloe's Island was purchased, and hospital buildings erected thereon, which were placed under his charge. He continued the practice of his profession to an advanced age, and upon the establishment of the New York Medical Society in 1788 was elected its first president.

**BARD, Thomas Robert,** American politician: b. Chambersburg, Pa., 8 Dec. 1841; d.

Hueneme, Cal., 5 March 1915. He engaged in railroading in Maryland 1858–64, when he went to California to attend to the interests of Col. Thomas A. Scott. From this time he resided in Ventura County, engaging in wharving and warehousing, banking, sheep grazing, real estate and petroleum mining. In 1892 he was the only Republican elector for California. He was elected to the United States Senate 7 Feb. 1900 by the unanimous vote of the Republican majority in the legislature and served until 1905.

**BARD**, Italy, a fortress and village, about 23 miles southeast of Aosta. The fortress, which stands on a huge mass of rock at an elevation of 1,019 feet, has been thrice taken: in 1052 by Duke Amedeus of Savoy; by the French during the War of the Spanish Succession in 1704; and in 1800, before the Battle of Marengo, when the troops of Napoleon, having crossed the Saint Bernard, found their further advance into Italy checked here by 400 Austrians, who maintained a stubborn defense for a week. Ultimately Napoleon contrived to elude the vigilance of the garrison, and passed by a mountain-track during the night.

**BARD**, a designation applied to the ancient poets of the Celtic tribes, who in battle raised the war-cry, and in peace sang the exploits of their heroes, celebrated the attributes of their gods and chronicled the history of their nation. Their early history is uncertain. Diodorus tells us that the Celts had bards, who sang to musical instruments; and Strabo testifies that they were treated with respect approaching to veneration. There is a passage in the 'Germania' of Tacitus in which a word occurs that some have read as *barditus*, and translated "Bard's Song"; but *baritus* appears to be the true reading, and the true signification merely "War-cry."

The first Welsh bards of whom anything is extant are Taliesin, Aneurin and Llywarch Hen, of the 6th century; but their language is imperfectly understood. From the days of these early representatives of the bards we have nothing further till the middle of the 10th century, when the reputation of the order was increased under the auspices of Howel Dha. A code of laws was framed by that prince to regulate their duties and fix their privileges. They were distributed into three classes, with a fixed allowance; degrees of rank were established, and regular prize contests, known as *eisteddfods*, were instituted. Their order was frequently honored by the admission of princes, among whom was Llewellyn, last King of Wales. The Britons, kept in awe as they were by the Romans, subsequently harassed by the English, and jealous of the attacks, the encroachment, and the neighborhood of aliens, were, on this account, attached to their Celtic manners. This situation and these circumstances inspired them with a proud and obstinate determination to maintain a national distinction, and preserve their ancient usages, among which the bardic profession is so eminent. Sensible of the influence of their traditional poetry in keeping alive the ideas of military valor and of ancient glory among the people, Edward I is said to have collected all the Welsh bards, and caused them to be hanged by martial law as stirrers up of sedition. On this incident is founded Gray's well-known ode 'The Bard.' We, however, find them existing at a much later period, but confining themselves to the humble task of compiling private genealogies. But little is known of the music and measures of the bards; their prosody depended much on alliteration; their instruments were the harp, the pipe and the crwth. Attempts have been made in Wales for the revival of bardism, and the Cambrian Society was formed in 1818, for the preservation of the remains of this ancient literature and for the encouragement of the national muse. Within recent years the *eisteddfods* have again assumed a national importance. The bardic institution of the Irish bears a strong affinity to that of the Welsh. The professional bardic schools only disappeared at the end of the 18th century. The genealogical sonnets of the Irish bards are still the chief foundations of the ancient history of Ireland. Their songs are strongly marked with the traces of Skaldic imagination, which still appears among the "tale-tellers," a sort of poetical historians, supposed to be the descendants of the bards. There was also evidently a connection of the Welsh with Armorica. Hence, in the early French romances, we often find the scene laid in Wales; and, on the other hand, many fictions have passed from the Troubadours into the tales of the Welsh. In the Highlands of Scotland bards were in existence down to the 17th century. Considerable remains of compositions supposed to be those of the old bards are still preserved. Consult Jones, 'Relics of the Welsh Bards' (London 1784); Stephens, 'Literature of the Kymry' (London 1873); Hyde, 'Literary History of Ireland' (New York 1906); Hull, 'Irish Literature' (Vol. II, London 1908); Walker, 'Memoirs of the Irish Bards' (London 1786).

**BARDE, Frederick Samuel**, American writer and naturalist: b. Hannibal, Mo., 25 July 1869; d. Guthrie, Okla., 23 July 1916. After receiving an academic education at Sedalia, he began work as a newspaper reporter at that place. In 1894 he joined the staff of the Kansas City *Star* and, four years later, was sent as its representative to Guthrie, then the capital of Oklahoma Territory. Reporting legislative sessions, political conventions and statehood gatherings and visiting all parts of the Indian and Oklahoma Territories, his acquaintance with the people and their history and institutions became very thorough and his remarkable aptitude for discernment and analysis, coupled with his ability as a writer, gave him a hearing and a measure of influence that is seldom exerted by an independent writer. Many of his contributions were published in metropolitan papers and magazines in the Eastern cities. He edited and aided in the publication of several books, among them 'The Life of Billy Dixon' (buffalo hunter), Gen. J. C. Jamison's 'With Walker in Nicaragua' and Doolin's 'Outdoor Oklahoma.' For many years an ardent sportsman, in his later years he gave up the rod and gun for the camera and became known as one of the most successful wild bird and animal photographers in America. The Oklahoma legislature (1917) made a special appropriation for the purchase of his manuscripts, field-notes, photographs, negatives and other material per-

taining to the history, folklore, fauna and flora of the State, the collection to be deposited with the Oklahoma Historical Society.

**BARDEEN, Charles William,** American editor and author: b. Groton, Mass., 28 Aug. 1847. He served with the 1st Massachusetts Volunteers in the Civil War, 1862–64, and was graduated at Yale University in 1869. He held several educational positions in the years following and in 1872 became superintendent of schools at Whitehall, N. Y. He has been editor and publisher of the *School Bulletin* since 1874. He was placed in charge of the educational publications at the International Congress of 1893, was president of the Educational Press Association of America 1900–06. His published works include 'Manual of School Law' (1875); 'Some Facts About Our Public School System' (1878); 'Educational Journalism' (1881); 'Teaching as a Business for Men' (1885); 'The Teacher As He Should Be' (1891); 'History of Educational Journalism in New York' (1893); 'Geography of the Empire State' (1895); 'Problems of City School Management' (1899); 'Dictionary of Educational Biography' (1901); 'Educational Journalism for the Past Fifty Years' (1906); 'Fables for Teachers' (1909); 'A Shattered Halo' (1912); 'The Trial Balance' (1913); 'The Girl from Girton' (1913).

**BARDELL, Mrs.,** the obliging landlady of Mr. Pickwick in Dickens' 'Pickwick Papers,' and the heroine of the famous 'Bardell vs. Pickwick' case.

**BARDESANES,** bär-dē-sā'nēz, Syrian poet and theologian, who lived in the latter half of the 2d century, in Edessa, and is memorable for the peculiarity of his doctrines, which were taught through 150 hymns ascribed to him and in use in the Church till the 4th century. He considered the evil in the world only an accidental reaction of matter, and all life as the offspring of male and female Æons. From God, the inscrutable Principle of all substances, and from the consort of this first Principle, proceeded Christ, the Son of the Living, and a female Holy Ghost; from these, the spirits or created powers of the four elements; this forming the holy eight, or the godlike fullness, whose visible copies he found in the sun, moon and stars, and therefore attributed to these all the changes of nature and of human destiny. The female Holy Ghost, impregnated by the Son of the Living, was, according to him, the Creator of the world. The human soul, originally of the nature of the Æons, was confined in the material body only as a punishment to its fall, but not subjected to the dominion of the stars. He considered Jesus, the Æon, destined for the salvation of souls, only a feigned man, and his death only a feigned death, but his doctrine the sure means to fill the souls of men with ardent desires for their celestial home, and to lead them back to God, to whom they go immediately after death, and without a resurrection of the earthly body. Bardesanes propagated this doctrine in Syrian hymns, and is the first writer of hymns in this language. The Bardesanists did not formally separate themselves from the orthodox Christian Church, and they maintained themselves until the 5th century. A fragment of the work of Bardesanes upon destiny is preserved in the Greek language, by Eusebius, 'Præpar. Evangel. lib. vi, cap. 103.' He led an irreproachable life. Consult Helgenfeld, 'Bardesanes' (1864).

**BARDILI, Christoph Gottfried,** German metaphysician: b. Blaubeuren, Würtemberg, 28 May 1761; d. Stuttgart, 5 June 1808. He was distinguished as a critic and opponent of Kant, and philosophically a forerunner of Schelling and Hegel through his exposition and defense of the reality of pure abstract thought as a ground of concrete thinking and being.

**BARDOLPH,** Shakespearean character. He is one of the dissolute comrades of Falstaff and appears in the plays 'Henry IV,' parts I and II; 'Henry V'; and Merry Wives of Windsor.'

**BARDOWICK,** bär'dā-vēk, Germany, town in Hanover, once the commercial centre of northern Germany, but now an insignificant village, famous for the ruins of a one-time magnificent cathedral, dating from before the destruction of the town in 1189. The region is fertile, and the town is a centre for trade in farm products. Pop. (1910) 2,200.

**BARDS.** Spelled variously barde, barding, etc. Horse-armor, often wrongly termed *caparisons*. The latter is the term for rich coverings (*housings*) spread over the back of horses on ceremonial occasions, whereas the bardings were to protect the war-horse (*destrier*) in combat. The ancient Dacian mounted spearmen's (*cataphracti*) horses were entirely covered with scale armor, including head and feet. The Etruscans used a chest protection (*plastron*) for war-horses; the Persians and Greeks used a horse frontal. A *testière* of leather covering the entire head of the horse was known in very early days in Europe. By the 13th century chain armor (called "trapper of mail") for horses was used in Europe; the leather "breast-piece" is mentioned in 1347. Plate armor for horses was introduced into Europe, piece by piece, in the Middle Ages to become a complete panoply by the middle of the 15th century. The full set (*panoply*) consisted of chanfron, crinet, peytral, flanchard, croupière, tail-guard, rein-guard. The purposes for these different pieces were as follows:

Chanfron (spelled variously chamfron, champfrein, etc.) or frontal, a guard for the forepart of the horse's head (with or without blinkers). Crinet, crinière or crinale, armor for the neck of the horse. Peytral, polytral, poitrail or poitrinal, a brestplate. Flanchard, armor to protect the flanks. Crupper, or croupière, a protection for the horse's rear. Tail-guard, a tubular appendix to the croupière, served to protect the tail. Rein-guard, hinged plates protecting the reins.

The above full panoply became quite general by the middle of the 16th century, but from that time was, piece after piece, discarded till by 1600, horse armor was becoming rare. Armor for the horse's legs was rarely used. In order to reduce the effect of chafing, horse armor was lined with leather.

CLEMENT W. COUMBE.

**BARDSTOWN,** Ky., city and county-seat of Nelson County, 40 miles southeast of Louisville, on the Louisville and Nashville Railroad.

It is the seat of Bethlehem Academy and of Saint Joseph's College. It contains flour mills, saw mills, chair, broom and concrete works and a barrel factory. The city has a large trade in cattle, grain and hogs. The municipality owns the waterworks and lighting plant. From 1808 to 1841 Bardstown was the seat of a Roman Catholic bishopric, which was transferred to Louisville in the latter year. Pop. 2,126.

**BARDWAN,** bŭrd-wän', India, a division of Bengal, upon the Hugli, about 75 miles from Calcutta. Area, 13,850 square miles; pop. 8,245,000. Apart from its products, rice, grain, hemp, cotton, indigo, etc., it has a noted coal field of about 500 square miles in area, with an annual output of about 500,000 tons. The capital of the same name has a population of about 35,000. It is a miserable place — an aggregate of second-rate suburbs — but contains numerous temples and a large palace.

**BAREBONE,** or **BARBON, Praise-God,** the name of a leather seller in Fleet street in London, well known in his day as a prominent preacher among the Baptists: b. about 1596; d. 1679. He made himself notorious as an enemy of the monarchy and in 1660 on Monk's arrival in London, Barebone, at the head of a numerous mob, presented a petition to Parliament against the restoration of the Stuarts. In 1661 he was committed to the Tower and remained for some time in confinement.

**BAREBONES PARLIAMENT,** a derisive term applied to the "Little Parliament" summoned by Oliver Cromwell 4 July 1653. After the dismissal of the "Rump," 20 April 1653, letters were sent out in name of Cromwell and of the Council of the Army to the Congregational churches in each county, inviting them to nominate fit persons, "faithful, fearing God and hating covetousness," to serve in Parliament. These lists were duly sent in, subjected to scrutiny by the army council and names excluded from or additions made by that body. This Parliament consisted of 140 members — 129 from England, 6 from Ireland and 5 from Scotland; and to it Cromwell made over his dictatorship. This "Assembly of Nominees" began by abolishing the Court of Chancery and was proceeding to abolish tithes when under pressure by the army the majority resigned in a body; Cromwell dissolved Parliament on 12 December of the same year and immediately thereafter assumed the lord protectorate of the kingdom. Its title is taken from one Barebone, a tanner, one of the members for the city of London. Judged by modern standards, some of its proposals showed political wisdom: civil marriages and the due registration thereof may be cited as an example. Consult Glass, H. A., 'The Barebones Parliament' (London 1899).

**BAREFOOTED FRIARS.** See FRIARS.

**BARÉGE** bä-räzh, a light, open tissue of silk and worsted or cotton and worsted for women's dresses, originally manufactured near Baréges, France, and in that country known as crêpe de barége. The fabric is now chiefly manufactured at Bagnères de Bigorre.

**BARÉGES** (ancient VALLETRIA), France, watering place in the south of France, department of the Hautes-Pyrénées, 22 miles south from Tarbes, and celebrated for its thermal springs. The springs are considered efficacious for rheumatism, scrofula and old wounds. It is situated in a valley between two perpendicular chains of mountains, along with numerous other villages. From June to September it is crowded with patients, and the bath establishment is a spacious marble building. A military hospital and an ecclesiastical charity hospital are also prominent local institutions. Extreme cold and the danger of frequent avalanches almost depopulate the town in winter.

**BAREILLY,** bä-rā'lę, Hindustan, town in the northwest provinces, capital of a district of the same name, 151 miles east-southeast from Delhi. It has a pleasant and elevated site, and contains one well-built street, an old and a new fort, and cantonments in the environs. The principal manufactures are ornamental furniture, sword-cutlery, gold and silver lace and perfumery. There is a brisk and lucrative commerce in grain, cotton and sugar, the tax on which is the chief source of municipal revenue. On the outbreak of the Indian mutiny the native garrison mutinied and took possession of the place. It was retaken by Lord Clyde in May 1858. Pop. 129,462.

**BARENTZ, William,** Dutch navigator: b. about 1560, who discovered Nova Zembla in 1594. While on a third expedition to the same region, in 1596, he discovered Spitzbergen, but had to spend the winter of 1596-97 in Nova Zembla. He and his companions suffered great hardships which led to his death on the homeward journey. Relics of his expedition were discovered undisturbed in 1871.

**BARÈRE DE VIEUZAC,** bä-rār-dĕ-vyēzą̆k, **Bertrand,** French revolutionist and agitator: b. Tarbes, 10 Sept. 1755; d. 14 Jan. 1841. An advocate of Toulouse, he acted as a deputy in the National Assembly, and was sent by the department of the Hautes-Pyrénées to the National Convention in 1792. He soon became active as a journalist, and attached himself to the *Mountain,* supporting it with eloquence of such a flowery and poetical style as afterward earned him the name of the "Anacreon of the guillotine." He was president of the convention when the sentence was passed upon Louis XVI. He rejected the appeal to the people, and gave his vote with these words: "The law is for death, and I am here only as the organ of the law." Though a supporter of Robespierre, he concurred in his downfall, yet this did not save him from being impeached and sentenced to transportation. His sentence was not carried into effect, and he shared in the general amnesty of the 18th Brumaire. Elected a deputy during the Hundred Days, he was banished after the second restoration. He went to Brussels, where he devoted himself to literary work till the revolution of July permitted his return.

**BARETTI,** bä-rēt'te, **Giuseppe Marc' Antonio,** Italian writer: b. Turin 1719; d. 5 May 1789. In 1751 he took up residence in London. In 1753 he published a 'Dissertation on Italian Poets.' About this time he was introduced to Johnson, then engaged in the compilation of his 'Dictionary,' of which Baretti availed himself to compile an Italian and English dictionary in 1760, much more complete than any which had hitherto appeared, and which established his reputation as a scholar. In this year

he visited his native country, and published at Venice a critical journal, the *Frusta Letteraria*, which was soon suppressed. He returned to England in 1766, and in 1768 published an 'Account of the Manners and Customs of Italy.' While defending himself in a street brawl he mortally wounded one of his assailants, and was tried for murder at the Old Bailey, but acquitted. On this occasion Johnson, Burke, Goldsmith, Garrick and Reynolds gave testimony to his good character. In 1770 he published his 'Journey from London to Genoa through England, Portugal, Spain and France,' and continued to publish introductory works for students in the Italian and other modern languages, and superintended an edition of Machiavelli's works. He was the author in all of 36 volumes. His 'Opere Scritte in Lingua Italiana' appeared at Milan in six volumes in 1813–18. Baron Pietri Custodi published his 'Scritti Scelti, Inediti, o Rari' (1822). Consult L. Collison Morley, 'G. Baretti, with an Account of His Literary Friends' (London 1909).

**BARGE CANAL, The New York State.** The improvement of the New York State canals authorized by a vote of the people in 1903 has become popularly known as the Barge Canal. This phrase is without particular significance in itself, being but the shortened form of "Thousand-ton barge canal," the name which was first given, based on the proposed size, but which is now a misnomer, since subsequent legislation has increased the capacity of the canal two or three fold.

The Barge Canal is the improvement of four branches of the State waterway system. These canals had already undergone various enlargements, but the Barge Canal is more than an enlargement, in several respects it is a radical change in form of construction. Of these changes, three are especially prominent. First, the new canal has no towing-path and consequently no animal towage. Again, electrically-driven machinery replaces hand-operation. But the greatest change is the substitution of river canalization for independent canals. When the original State canals were built the best practice of the time dictated a channel separated from the natural streams. Canal-builders naturally sought the valleys, but they put their waterways away from and slightly above the stream beds. Modern practice, because of ability to cope with floods, boldly chooses the valley bottoms and makes the natural stream into a canal. This procedure has largely changed the locations of canals in New York, in some instances placing the new channel several miles from the old waterway. Briefly to summarize the chief changes — the Barge Canal is a thorough modernization in size, construction and equipment.

The four branches improved are: (1) The Erie, or main canal, which stretches across the State from east to west and joins the Hudson River with Lake Erie; (2) the Champlain, which runs northerly from the eastern terminus of the Erie and enters the head of Lake Champlain; (3) the Oswego, which starts north, midway on the line of the Erie, and reaches Lake Ontario; (4) the Cayuga and Seneca, which leaves the Erie a little to the west of the Oswego junction and extends south, first to Cayuga Lake and then to Seneca Lake.

The Barge Canal, while differing from the earlier canals in many respects, is really but a stage in the development of the State waterways. The original Erie and Champlain canals, completed in 1825 and 1823, respectively, were so successful that a veritable mania for canal-building spread over both the State and nation. In New York this agitation resulted in the building of several additional canals and in the enlargement of the original Erie within 11 years after its opening, and a few years later in the enlargement of the three other canals which are now parts of the Barge Canal improvement. This first enlargement was protracted through 26 years and even then was not entirely finished. About a decade later a popular feeling of opposition to canals became so strong as to bring about, within the next half dozen years, the abandonment of several lateral branches. However, shortly after this the adverse sentiment gave place to a favorable attitude and an improvement was undertaken which proved to be the beginning of a reawakening of interest in canals that has endured until the present time.

This period of reawakening found its first expression in 1884 in the lengthening of locks. In 1892 came the first official suggestion of an enlargement similar to what has become the Barge Canal. The Constitutional Convention of 1894, recognizing the popular demand for improved canals, included an article in its proposed amendments whereby such improvement could be authorized. This enlargement, ordered by the people in 1895 and calling for nine feet depth in the Erie and Oswego canals and seven feet in the Champlain Canal, owing to the exhaustion of funds, was but partially completed.

At the beginning of 1899 the State found itself in a quandary. The old canals were antiquated; the attempted improvement was unavailable without considerable additional outlay. As a result a committee of eminent citizens was appointed, with authority to study the whole situation and in effect to formulate a canal policy for the State. This committee reported to the legislature of 1900, giving rough estimates for completing the attempted enlargement and also for making improvements on lines substantially like those later adopted, and recommending for immediate action the making of careful surveys and estimates for the latter scheme. Almost contemporaneously with the work of this committee, two Federal investigations had been in progress — the Deep Waterways survey and a study of relative costs of transportation between lakes and sea by ships and by barges. These investigations produced valuable data and helped mold public sentiment.

The recommended survey was made in 1900, with a report to the legislature in 1901. Inability of canal advocates to concentrate on any one plan delayed legislative action till 1903. Then, after a revision of estimates, the measure was referred for a vote at the 1903 fall election. It was carried by a substantial majority and authorized the expenditure of $101,000,000 for improving the Erie, Champlain and Oswego canals. Plans were begun at once, but the undertaking was so enormous that actual construction did not begin till the spring of 1905. In 1909, after surveys had been made, the Cayuga and Seneca Canal was ordered to

be enlarged to Barge Canal dimensions by a second referendum, which appropriated $7,000,000. Construction progressed steadily till 1915, when it became necessary to provide $27,000,000 more, for the purpose of completing the three canals first undertaken. This was done by another referendum and was necessitated largely by court awards for damage and property claims and in lesser measure by very greatly increased costs for labor and materials.

To provide suitable terminals for the new canals, a fund of $19,800,000 became available by a vote of the people in 1911. Several years' agitation preceded this action. In 1909 a commission composed of certain State officials had been appointed to investigate and report on the subject. In 1910 this commission was sent to Europe to study the terminals there.

The Barge Canal may be aptly called Nature's gateway to the heart of the continent. Nature surely prepared the route. The Hudson, which has a safe and commodious harbor at its mouth, is the only navigable Atlantic seaboard river in the United States which cuts the coast range of mountains. In the centre of the State a second range makes way for a valley. At Little Falls a rocky barrier was pierced during the last glacial overflow by the waters of the Great Lakes. Also natural watercourses across the State — one from east to west across the centre, one from the extreme south to the extreme north across the eastern side and one almost across from north to south at the centre — are provisions which man has appreciated and utilized. Westward from the canals the Great Lakes extend a thousand miles inland.

There are 442.6 miles of construction in the new canals. The 358.7 miles of intervening lakes and adjoining rivers make a total of 801.3 miles — the length of the State waterway system of Barge Canal dimensions. Of this whole system about 72 per cent of the length is in river or lake channel. Thus it appears that the Barge Canal is largely a river canalization scheme. A brief description of the route will give force to this statement.

The Hudson River from the ocean to the mouth of the Mohawk is the first link. The bed or valley of the Mohawk is utilized from the Hudson to the old portage near Rome. Then Wood Creek, Oneida Lake, and Oneida, Seneca and Clyde rivers are used, carrying the channel to the western part of the State, where the streams run north and the alignment of the old channel is retained for the new canal. The other branches of the Barge Canal occupy natural streams throughout most of their length, the Champlain branch lying in the canalized Hudson River and Wood Creek, the Oswego branch utilizing Oswego River, and the Cayuga and Seneca Canal occupying the bed of Seneca River. Also Lake Champlain and Onondaga, Cross, Cayuga and Seneca lakes form parts of the waterway system.

There are various "land lines," for passing around dams, cutting off bends and other purposes, and in the western part of the State the new channel is largely a widening and deepening of the old canal.

The dimensions of the Barge Canal are the same for all four branches. Briefly, the minimum channel in earth cutting in the independent or artificial canal, or land line, is 75 feet wide at bottom and 123 to 171 feet at water-surface. In rock cutting, with nearly vertical sides, the width is 94 feet. In river and lake channels the width is from 150 to 200 feet. There is a depth of 12 feet throughout. The actual dimensions vary greatly, but the minimum size is fixed by law. The locks have generally been reported to have a length of from 338 to 343 feet between gates (310 feet available length) and a width of 45 feet. However, from actual measurements after construction it has been found that the largest parallelogram to fit all the locks is limited to 300 feet by 44.44 feet. Boats having ends to conform to a certain rounded head-wall may utilize 10 feet more.

The critical points in supplying water to canals are the summit levels. The new Erie Canal has one summit level — in the vicinity of Rome — and one half-summit — at the Lake Erie end. A glance at the profile will show these summits and how the canal descends from them. The natural flow of the streams which are canalized to form the Barge Canal is in general sufficient to maintain the requisite depth of water in the levels between the locks and also to supply the water required for lockage and incidental operations.

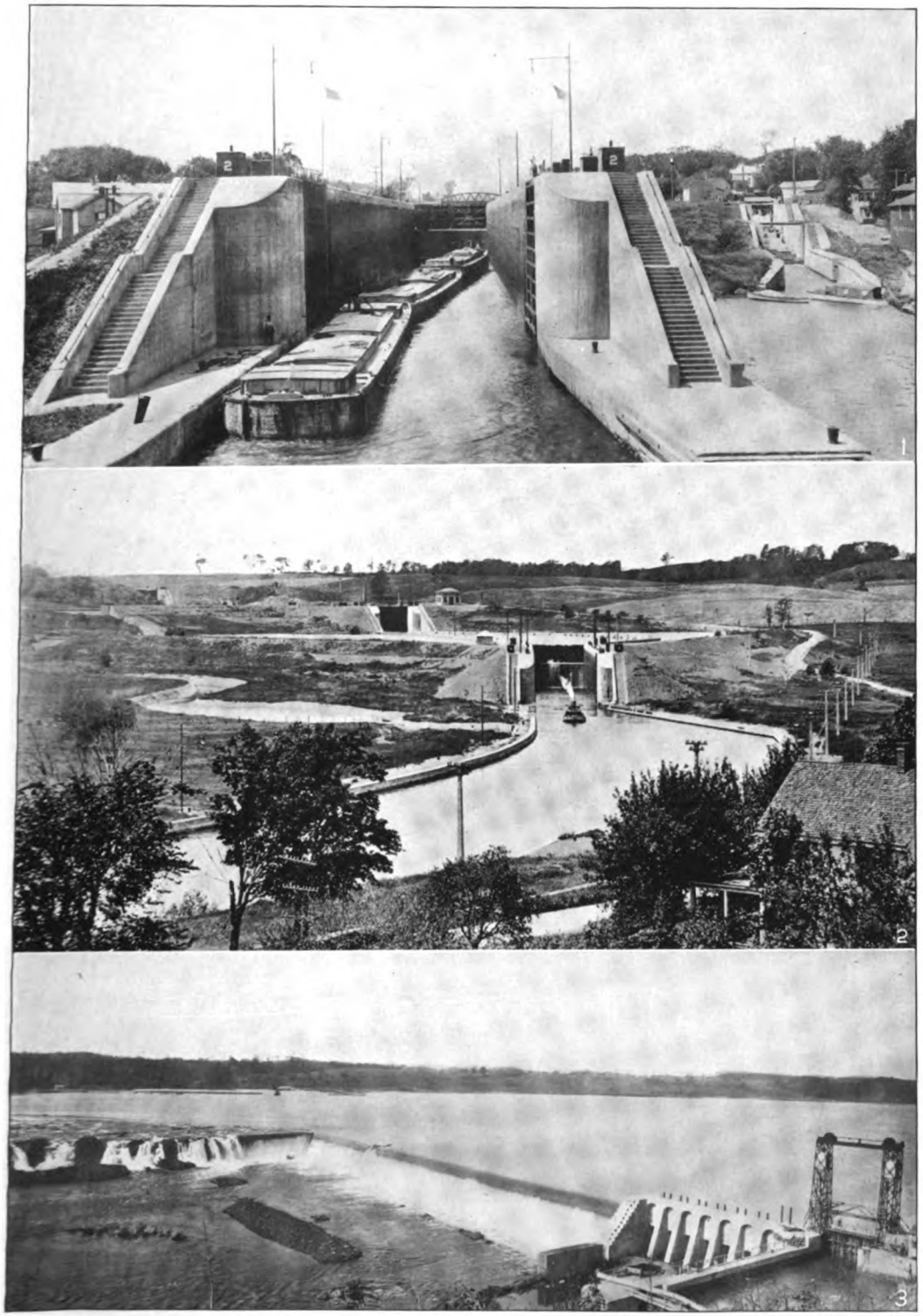
The greatest independent water-supply for the Erie Canal is that for the western section. Fortunately an almost unlimited supply is available by tapping the Niagara River. From here it is necessary to carry a continuous supply easterly to the Seneca River. In order to pass this water in requisite volume, the canal bottom on the long levels has been given a proper grade, which provides for carrying at least 1,237 cubic feet per second. It is estimated that this supply is adequate, not only for 10,000,000 tons seasonal traffic, for which the Barge Canal is designed, but also for the maximum traffic which the canal is capable of handling, namely, from 18,500,000 to 20,000,000 tons per season. To furnish the Rome summit level the existing sources of supply are retained and two new reservoirs, Delta and Hinckley, are built. The old Rome level was supplied by an extensive system of reservoirs and feeders, built largely in the Adirondack region. This entire system is retained, together with such portions of the old canal as are needed to bring the waters to the Barge Canal.

The Champlain Canal has a summit level between Lake Champlain and the Hudson River. The corresponding summit of the old canal was supplied by a feeder which took its water from the Hudson at Glens Falls. This same Glens Falls feeder, improved, supplies the needs of the northern portion of the new Champlain Canal, while the southern portion lies in the channel of the Hudson.

Seneca and Cayuga lakes, lying at the heads of their respective stretches of the Cayuga and Seneca Canal, form natural reservoirs to supply both this canal and the Erie branch between its junction with the Cayuga and Seneca Canal and Three River Point.

The Oswego Canal begins at Three River Point. Here Oneida and Seneca rivers unite, bringing their natural flow and also a part of the supplies from the Rome level reservoirs and Lake Erie. As the canal is chiefly in the Oswego River, its needs are amply met.

## BARGE CANAL

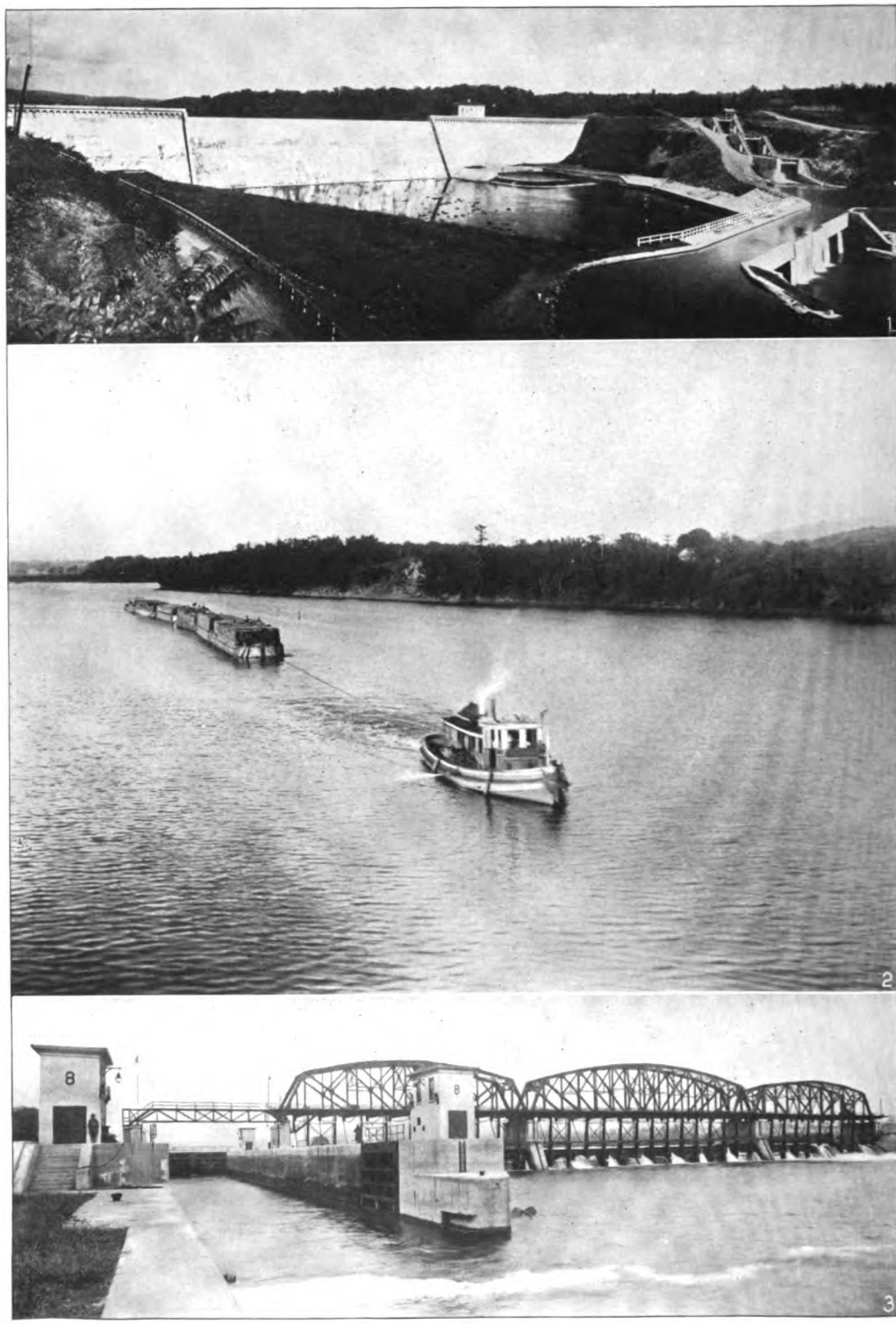


1 A Barge canal lock. First of the Erie canal, locking up out of the Hudson. Three old locks, used now as a by-pass, at the right

2 Three of series of 5 locks (lock in view above is first of series) within stretch of 1½ miles, forming greatest series of high lift locks in the world; aggregate lift, 169 feet

3 A dam 2,000 feet long for canalizing the lower Mohawk

## BARGE CANAL



1 A dam 1,100 feet long and 100 feet high, forming a reservoir on Mohawk headwaters for supplying canal
2 Navigation of old-sized boats on typical river canalization
3 Lock and movable dam of bridge type in Mohawk river

Electric equipment on the canal is of the newest design. In general a hydro-electric power station at each lock supplies the needed energy for lighting and operating. Some stations supply more than one lock, substations being provided where necessary. Gasoline electric stations are used at movable dams, where the head of water needed for developing power is destroyed by the act of raising the dam. The turbines and generators in each station are in duplicate. Also hand-operating devices are available in case both sets of electric installation are disabled.

The Barge Canal locks are built of concrete throughout, both side and cross walls and floor. At a few points, where favorable rock is encountered, the concrete floor has been dispensed with. The lifts range from 6 feet to 40½ feet. Within each side wall runs a culvert for filling and emptying the lock. The culverts are connected with ports that open into the chamber at the bottom of the walls. These culverts vary in size, the dimensions being 5 by 7 feet for locks of 12 feet lift or less, 6 by 8 feet for lifts between 12 and 23 feet, and 7 by 9 feet when the lift is 23 feet or more. The lock-gates are of the mitering, girder type, carrying the principal load as beams. They are built of steel, with single skin-plates, but have white oak quoin and toe-posts. The quoin-post swings on a cast-steel pivot, set in the concrete, and is held at the top by an adjustable anchorage. The bearing is against cast-iron quoin-plates set in the side walls. The lock-gates are each opened and closed by a steel spar equipped with a heavy coil spring to absorb shock and secured to the gate by a bronze pin. This gate spar is also equipped with a rack actuated by a seven-horse-power motor acting through a train of gears designed to open or close the gates in about one minute. Movement of the gates is controlled from operating stands, located at each end of each side wall. The valves regulating the flow of water to the culverts are suspended on two chains, which pass over chain wheels near the top of the valve wells to suitable cast-iron counterweights. The chain wheels are mounted on a shaft rotated by a motor operating through a train of gears. The movement of the valves is controlled in a manner similar to the movement of the gates. Electric capstans, one at each end of each lock, are provided to control the movement of boats along the approach walls and to tow them into and out of the lock chamber.

Reinforced concrete power stations, 20 by 30 feet in plan and about 20 feet high, are, in general, constructed adjacent to the various locks. The hydro-electric power stations, operated by the water in the canal, are each equipped with two vertical-shaft turbines, which in all but a few cases are directly connected to 50-kilowatt vertical-shaft generators, supplying direct current at 250 volts. The gasoline electric stations are each equipped with two generators directly connected to gasoline engines designed to operate at a speed of 600 revolutions per minute.

New York has recognized the supreme weakness of most American waterways — the lack of terminals and efficient freight-handling machinery — and is supplying these needs in the Barge Canal. However, it was eight years after the canal was authorized before the terminals were added. But their construction has been pushed with such vigor that they are ready with the opening of the completed canal. These terminals are located at some 50 cities and villages along the canals as well as on some of their connecting natural watercourses. The character of the terminal varies to meet the needs of each particular locality, but in general a terminal consists of a suitable place for dockage, the machinery for handling goods quickly and cheaply, a building for temporary storage and in many places connections with adjacent railways. The purpose of the State is to furnish a place where any shipper or boatman may have the advantages of efficient terminal facilities at a reasonable cost. Recent legislation has vested the State Public Service Commission with power to require connections to be built between railroads and canal terminals, as well as authority to regulate freight rates and control combinations of rail and water routes.

Since the Barge Canal lies so largely in lake and river channel, various aids to navigation are needed, such as lighthouses, range towers, beacons, buoys and markings on bridges. Lights, either fixed, flashing or occulting, are displayed by night. The Federal practice of marking channels has been adopted, but with the interpretation that upstream means proceeding away from the ocean toward the interior, irrespective of local conditions of actual upstream or downstream. Thus in going westerly from the Hudson on the Erie Canal or in proceeding away from the Erie Canal on any of the other canals, red lights are on the right or starboard side of the channel and white lights are on the left or port side. The buoys and beacons which show red lights are painted red, while those which show white lights are painted black, but this latter color will probably be changed to white.

A study of the distribution of population in New York State reveals some important conditions. It is discovered that within two miles of the State waterways live 73½ per cent of the people of the State. If the distance is extended so as to include the territory within 5, 10 and 20 miles, the percentages are 77, 82 and 87, respectively. Looking from another angle, it appears that within 20 miles lies 46 per cent of the area of the whole State. If lines are drawn on a map — one at 50 and one at 70 miles from the waterways — we find that 71 and 88 per cent, respectively, of the area lie within them. These are the respective distances which motor trucks of 3½ and 2 tons' capacity can cover in a day's run, going and returning. This fertile field for motor truck operation in connection with the enlarged canals is full of promise. The importance commercially of the conditions revealed by this study is not generally appreciated, but a little consideration will discover what it means to the State and to the country at large that there live within a half-hour's walk of the waterways three-quarters of the population of the State, about 7,000,000 people, or 7 per cent of the whole United States population, whose products and whose supplies may have available a means of cheap transportation.

The Barge Canal is the essential connecting link between two extensive and important waterway systems, which are in part existent and in part only projected. To the west lie the Great Lakes. Four noteworthy canals, to connect with these lakes, are in a fair way to be built. At the seaboard a project known as the Intracostal canals would give an inside passage along a large portion of our Atlantic Coast. The Federal government has made surveys for most of these canals and some it has already built. Of this whole vast scheme, the mileage now in existence is already great — 1,500 miles in the Lakes and 800 miles in New York waterways. The intracoastal chain would add 1,800 miles and the projects adjacent to the Lakes at least 800 miles more.

At the beginning of the 1918 season, the Federal government, as a war measure, assumed control of the Barge Canal in so far as traffic is concerned.

Certain statistical data follow:

Erie Canal—340.7 miles long; 35 locks, 674.45 feet total lockage; 2 guard-locks; 1 terminal lock; 6 junction locks; 4 feeder locks. Champlain Canal — 62.6 miles long; 11 locks, 168.3 feet total lockage; 2 junction locks. Oswego Canal — 23.8 miles long; 7 locks, 118.6 feet total lockage. Cayuga and Seneca Canal — 92.7 miles long, including Cayuga and Seneca lakes; 4 locks, 71.0 feet total lockage. Fifty-seven locks, 2 guard-locks and 1 terminal lock, all of Barge Canal dimensions, and 12 smaller locks have been built. Construction has included 30 new dams, 5 old dams with new crests and 5 old dams used without change; also 300 bridges and various other structures, including guard-gates, culverts, spillways, bulkheads, waste-weirs, by-passes, flumes, terminals, gate-houses, power-houses, warehouses, lighthouses and range towers. The total number of all kinds of structures exceeds 700. Some entirely new types of structure, siphon spillways and automatic crests on dams, have been originated in Barge Canal construction, and some novel and bold adaptations in design have occurred, such as the bridge type of movable dam, the siphon lock, the sector gate and an enormous Taintor gate. The first construction was begun on 24 April 1905; the first work on the Erie on 7 June 1905. Many finished portions have been put into use upon completion. The whole canal with full depth, but with isolated parts not yet of full width, is being put into use in 1918. A boat utilizing full lock dimensions can carry about 3,000 tons, but probably not many boats more than half that capacity will be used.

NOBLE E. WHITFORD,
*Senior Assistant Engineer, Department of State Engineer.*

**BARHADAD I,** King of Damascus from about 885 to 844 B.C. He was the ally of Asa, King of Judah against Israel and also fought against Ahab. He also campaigned against Shalmanezer III. It is probable that he was murdered by the usurper Hazael (2 Kings viii, 9–15).

**BARHADAD II,** King of Damascus from 804 to 744 B.C. He was the son of the usurper Hazael. He formed a coalition against Zakir, but was unsuccessful in the siege of Hazrak, Zakir's capital. Damascus was besieged in 803 and Barhadad was obliged to pay tribute to Adad-nirari IV, King of Assyria.

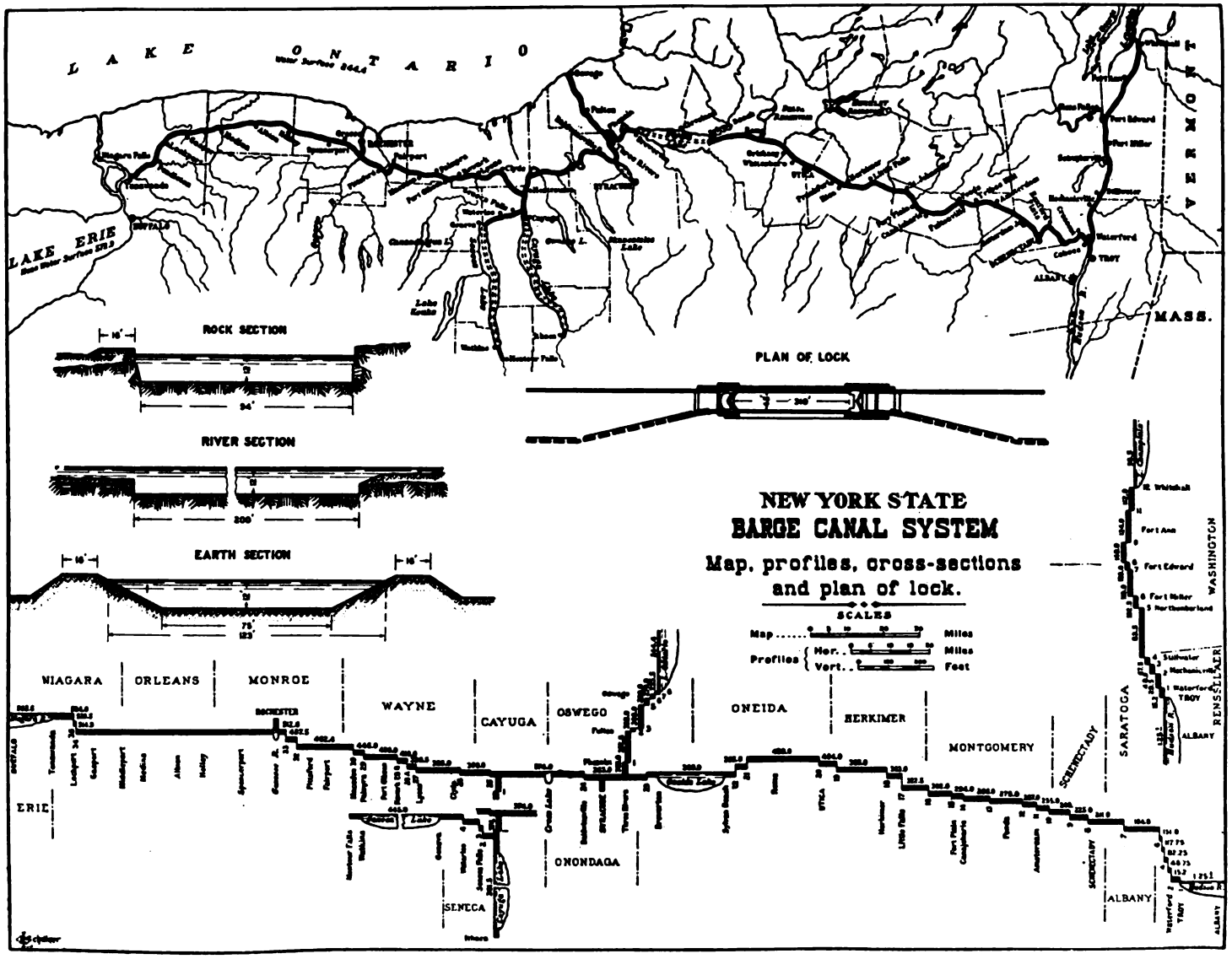
**BARHAM, Richard Harris,** English humorous writer: b. Canterbury, 6 Dec. 1788; d. 17 June 1845. Having been ordained a clergyman, he became in 1821 one of the minor canons of Saint Paul's Cathedral. In 1824 he was appointed a priest in ordinary of the chapel-royal, and was shortly afterward presented to the rectory of the united parishes of Saint Mary Magdalene and Saint Gregory, London. In 1837, on the starting of Bentley's *Miscellany*, under the editorship of Charles Dickens, he laid the foundation of his literary fame by the publication in that periodical of the 'Ingoldsby Legends'—a series of humorous tales in verse and prose which achieved an immense success, having in a collective form, from 1840 onward, been published over and over again in various editions, with many "legends" added to the original number. His life has been written by his son. See INGOLDSBY LEGENDS.

**BAR-HEBRÆUS** (or YUHANNA ABUL-FARAJ), Syrian bishop and historian: b. Malatiah 1226; d. Maragha, 30 July 1286. His father was a Jew by birth and the son became known as Bar-Hebræus, that is, "son of the Hebrew." His father having moved to Antioch Bar-Hebræus completed his education there. He studied Arabic and Syriac, philosophy, theology and medicine, and acquired distinction among his contemporaries. In 1246 he was ordained at Tripolis as Jacobite bishop of Gubas, near Malatia, and a year later was transferred to the neighboring diocese of Lakabhim, whence in 1253 he passed to be bishop of Aleppo. He was deposed soon after by his superior on account of disputes about the patriarchate, and was restored to his see in 1258. In 1264 he was promoted by the patriarch, Ignatius III, to be maphrian — the next rank below that of patriarch — an office he held until his death. To the modern student Bar-Hebræus is important as a historian. His Syriac 'Chronicle' is made up of three parts. The first is a history of secular events from the Creation to his own time and gives valuable information regarding the history of southeastern Europe and western Asia. The second and third parts of the 'Chronicle' deal with the history of the Church. For theologians his 'Ausar Raze' ('Storehouse of Secrets') is of special value as a critical and doctrinal commentary on the texts of the Scriptures. A full list of his other works and of editions of such of them as have been published is contained in W. Wright's 'Syriac Literature.' The more important of them are 'Kethabha dhe-Bhabhatha' ('Book of the Pupils of the Eyes'), a treatise on logic or dialectics; 'Hewath Hekhmetha ('Butter of Wisdom'), an exposition of the Aristotelian system of philosophy; 'Sullaka Haunanaya' ('Ascent of the Mind'), a treatise on astronomy and cosmography; various medical works; 'Kethabha dhe-Semhe' ('Book of Rays'), a treatise on grammar; ethic works, poems and 'Kethabha dhe-Thunnaye Meghahhekhane' ('Book of Entertaining Stories'), edited with translation

## BARGE CANAL

1 A guard-gate — a structure placed at points where a break would seriously damage canal or adjacent territory
2 A lighthouse — one of three used for aiding navigation on Oneida lake
3 Barge canal terminal at Albany, ocean schooners and old-sized canal boats lying alongside

BARGE CANAL


LAKE ONTARIO
LAKE ERIE
VERMONT
MASS.
ROCK SECTION
PLAN OF LOCK
RIVER SECTION
EARTH SECTION
NEW YORK STATE
BARGE CANAL SYSTEM
Map, profiles, cross-sections and plan of lock.
SCALES
Map ..... Miles
Profiles { Hor.. Miles
Vert.. Feet
NIAGARA
ORLEANS
MONROE
WAYNE
CAYUGA
OSWEGO
ONEIDA
HERKIMER
MONTGOMERY
SCHENECTADY
SARATOGA
WASHINGTON
RENSSELAER
ERIE
ONONDAGA
SENECA
ALBANY

by E. A. Budge (London 1897). The grammatical treatises were edited by Abbé Martin under the title 'Oeuvres grammaticales d'Aboul Faradj dit Bar Hebræus' (2 vols., Paris 1872). The 'Chronicle,' the first part, was published by Bruns and Kirsch (Leipzig 1789) and in a superior edition by Bedjan (Paris 1890). The second and third parts were edited by Abbeloos and Lamy (3 vols., Paris and Louvain 1872–77). For the Bible commentary consult Göttsberger, 'Barhebräus und seine Scholien zur Heiligen Schrift' (Freiburg 1900).

**BARI**, a negro people of Africa, dwelling on both sides of the White Nile. Gondokoro is their chief town. They practise agriculture and cattle-raising. Their country was conquered by Baker Pasha in 1871 for Egypt.

**BARI**, bä're (ancient BARIUM), Italy, important seaport of southern Italy, in Apulia, capital of the province of Bari delle Puglie, and situated on a promontory of the Adriatic, 69 miles northwest of Brindisi. It was a place of some importance under the Romans, passed from them to the Saracens, and was afterward selected as the seat of government by the Northmen who conquered Apulia. It has been thrice destroyed and rebuilt on the same site. The present town, surrounded by walls and defended by a castle, consists of a poorly-built old town with a better part of more recent date. It is the see of an archbishop and possesses a cathedral with a tower 260 feet high, dating from the early half of the 11th century, but largely spoiled by recent alterations. Its dome was renovated in 1905, and other alterations made. It contains paintings by Paolo Veronese, Tintoretto and Calabrese. The church of San Nicola dates from 1087; and there is also a royal lyceum. Bari manufactures cotton and linen goods, organs, pianos, hats, soap, glass and liquors, and has a trade in wine, grain, almonds, oil, etc. It has regular steamboat communication with Venice, Ancona, Trieste, Brindisi, Genoa and Marseilles. A United States consul is stationed here. Pop. 103,168.

**BARIATINSKI**, bär-yä-tēn'skē, **Alexander Ivanovich, Prince**, Russian field-marshal: b. 1814; d. Geneva, 9 March 1879. He was educated with the future Tsar Alexander II, and while a young officer in the hussars was transferred to the Caucasus, where his successes against the famous Shamyl secured him, in 1852, the rank of lieutenant-general. On the accession of Alexander II he returned to Saint Petersburg, and in 1856 was appointed to the command of the army of the Caucasus. Three successful campaigns were closed by the storming of Ghunib and the capture of Shamyl. For these services he was made a field-marshal. His health, however, had broken down, and the remainder of his life was passed chiefly abroad.

**BARILI**, bä-rē'lę, Philippines, a town in the province of Cebu, 27 miles from Cebu, its capital. Pop. about 32,000.

**BARILLA**, bä-re'-yä (Spanish, "impure soda"), the commercial name of a crude variety of soda obtained by burning certain fleshy plants that grow near the ocean and in other salty places. The *Salsola soda* was largely used for this purpose, and was cultivated in Spain, Sicily, Sardinia and other places on account of the considerable yield of barilla that it furnished. The plants were cut in September, dried for about a month, and then burned on an iron grating, beneath which was a pit into which the fused ashes fell. The burning was continued until a ton or two of the ash had accumulated in the pit, after which the product was allowed to cool, and was then broken up and shipped to market. Barilla contains about 20 per cent of soda, the remainder consisting chiefly of chlorides and sulphates of sodium, calcium and aluminum. It was formerly much used in the manufacture of soap, but has now been almost entirely replaced by purer grades of soda, obtained by chemical means from common salt. See KELP.

**BARING**, the family name of one of the most influential financial establishments in the world, the well-known house of Baring Brothers & Company. John Baring, the father of the founders, was a German cloth maker who engaged in business in a small way at Larkbear, Devonshire, England, in the earlier half of the 18th century. His sons, Francis and John, established the firm of Baring Brothers in London in 1770. In November 1890, owing to the collapse of South American securities, the firm was threatened with suspension, and a financial crisis ensued. With liabilities of £20,000,000 and assets of £12,000,000, the position was grave. Goschen, then Chancellor of the Exchequer, was pressed by the governor of the Bank of England to pledge the national security for £1,000,000, which he refused to do for any private firm; but a timely loan from the Bank of France and the co-operation of the Rothschilds and the joint stock banks in raising a guarantee fund of £18,000,000 averted the crisis without government aid or the suspension of the Bank Act. Since that time the bank has been reorganized as a limited banking company.

**BARING, Alexander.** See ASHBURTON, ALEXANDER BARING, LORD.

**BARING, Sir Evelyn.** See CROMER, EVELYN BARING.

**BARING, Sir Francis**, English banker: b. Larkbear, England, 1740; d. 1810. He obtained a commercial training, founded the great financial house of Baring Brothers & Company, became a director of the East India Company, and was created a baronet in 1793. He took an active part in the discussions relative to the Bank Restriction Act of 1797, and at the time of his death was reckoned the first merchant in Europe. His second son, Alexander, became 1st Baron Ashburton (q.v.).

**BARING, Sir Francis Thornhill**, English banker, son of Sir Thomas: b. 1796; d. 1866. Under successive Whig governments, he was a Lord of the Treasury, Secretary of Treasury, Chancellor of the Exchequer and First Lord of the Admiralty. He was created Baron Northbrook in 1866.

**BARING, Maurice**, English author and journalist: b. 27 April 1874. He was educated at Eton and at Trinity College, Cambridge. He entered the diplomatic service in 1898, was attaché to the British Embassy in Paris 1898–1900, third secretary to the British Embassy in Copenhagen 1900–02, and was transferred to

Rome in 1902. He was employed in the Foreign Office 1903–04, and resigned from the service in the latter year. He acted as war correspondent for the *Morning Post* in Manchuria in 1904, in Russia 1905–08, and was special correspondent for the same journal in Constantinople in 1909. In 1912 he was correspondent for the *London Times* in the Balkans, was gazetted temporary lieutenant in the British expeditionary force on the outbreak of the European War in 1914, and was promoted staff lieutenant in 1915. He has written novels, essays, narratives and poems, including 'Hildesheim and Quatre Pastiches' (1899); 'The Black Prince' (1902); 'Gaston de Foix' (1903); 'With the Russians in Manchuria' (1903); 'Mahasena' (1905); 'Desiderio' (1906); 'Sonnets and Short Poems' (1906); 'Thoughts on Art and Life of Leonardo da Vinci' (1906); 'A Year in Russia' (1907); 'Proserpine' (1908); 'Russian Essays and Stories' (1909); 'Orpheus in Mayfair' (1909); 'The Story of Forget Me Not' (1909); 'Landmarks of Russian Literature' (1910); 'Dead Letters' (1910); 'The Glass Mender' (1910); 'Diminutive Dramas' (1910); 'Collected Poems' (1911); 'The Russian People' (1911); 'The Grey Stocking and Other Plays' (1912); 'Letters from the Near East' (1913); 'Palamon and Arcite' (1913); 'What I Saw in Russia' (1913); 'Lost Diaries' (1913); 'The Mainsprings of Russia' (1914); 'An Outline of Russian Literature' (1914); 'Round the World in Any Number of Days' (1914), and contributions to the principal reviews.

**BARING, Thomas,** English banker and politician, brother of the first Lord Northbrook: b. 1799; d. 1873. He devoted himself early to commercial pursuits, and also to politics, in which he was a Conservative, thus taking the opposite side to his brother. He entered Parliament in 1835, representing the borough of Huntingdon from 1844 till his death.

**BARING, Thomas George,** 1st Earl of Northbrook: b. 1826; d. London, Eng., 15 Nov. 1904. He was successively a Lord of the Admiralty, Under-Secretary of State for India, Under-Secretary of War, governor-general of India (1872–76) and First Lord of the Admiralty (1880–85), and was created an earl in 1876.

**BARING-GOULD, Sabine,** English clergyman and novelist: b. Exeter, 28 Jan. 1834. He was graduated from Cambridge in 1856, and from 1881 was rector of Lew-Trenchard in Devon. Among his numerous works are 'Iceland: Its Scenes and Sagas' (1864); 'The Book of Werewolves' (1865); 'Curious Myths of the Middle Ages' (1866–67); 'Lives of the Saints' (1872–79); 'Yorkshire Oddities' (1874); 'Germany, Past and Present' (1879). Prominent among his novels and other later books are 'Mehalah: a Story of the Salt Marshes' (1880); 'John Herring' (1883–1913); 'Red Spider' (1887); 'Grettis the Outlaw' (1890); 'The Broom Squire' (1896); 'Guavas the Tinner' (1897); 'Bladys' (1897); 'Domitia' (1898); 'Pablo the Priest' (1899); 'A Book of the West' (1899); 'Furze-Bloom' (1899); 'The Crock of Gold' (1899); 'Winefred' (1900); 'A Book of Dartmoor' (1900); 'In a Quiet Village' (1900); 'Virgin Saints and Martyrs' (1900); The Frobishers'; 'A Book of Brittany' (1901); 'Royal Georgie' (1901); 'Miss Quillet'; 'Nebo the Nailer' (1902); 'Cliff Castles and Cave Dwellings of Europe' (1911); 'Village Sermons to Simple Souls' (1912).

**BARING ISLAND,** an island in the Arctic Archipelago. The name is also given to a bay and strait. They were named by Sir Francis Baring, who was First Lord of the Admiralty at the time of their discovery.

**BARINGO,** a lake in East Africa, northeast of the Victoria Nyanza, about 20 miles long, 200 square miles in area, and between 3,000 and 4,000 feet above sea-level. Though fed by many streams, it has no visible outlet. It contains several small islands and was discovered by Thomson in 1883.

**BARITE,** ba'rīt (Greek, "heavy," in allusion to its high specific gravity), a mineral having the formula $BaSO_4$, and crystallizing in the orthorhombic system, but also occurring massive, and in granular, earthy and stalactitic forms. It is usually white or nearly so, and has a hardness of from 2.5 to 3.5. Its specific gravity ranges from 4.3 to 4.6, and from this circumstance the mineral is often called "heavy-spar." Barite was first examined (in 1602) by Casciorolus, a shoemaker of Bologna, who discovered that it becomes phosphorescent when heated with combustible matter, and gave it the name *lapis solis,* or "sun stone." Barite occurs in many parts of the world, and in large quantities. The commercial sources are usually residual deposits in clay caused by the differential weathering of the enclosing limestone. It also occurs in veins and as a gangue mineral with metallic ores. In the United States it is found abundantly in many States, notably in Virginia, North Carolina and Missouri. The latter State yields over two-thirds of the total United States production. It constitutes an important source of barium compounds and is used largely in the manufacture of white paints. Barite was mined in the United States to the extent of 51,547 tons in 1914. It is rarely found pure, being generally associated with silica, lime, iron and often containing a percentage of galena. See also BARIUM; MINERAL PRODUCTION OF THE UNITED STATES.

**BARITONE,** or **BARYTONE,** a male voice, whose compass partakes of those of the common bass and the tenor, but does not extend so far downward as the one nor to an equal height with the other. Its best tones are from the lower A of the bass clef to the lower E or F in the treble; yet we find Verdi and Meyerbeer exacting G and even A flat from it. This name is also given to the smaller bass saxhorn in B flat or C, used in reed and brass bands.

**BARIUM,** a metallic element, strongly resembling calcium in its chemical properties. The mineral barite (q.v.) was the first compound of barium to be examined. In 1750 Marggraf showed that barite contains sulphuric acid, and the subsequent labors of Scheele and Gahn proved that it also contains a previously unrecognized earth, which Bergmann called *terra ponderosa,* or "heavy earth." In 1779 Guyton de Morveau proposed the name "barote" (Greek, "heavy") for this earth, and Lavoisier modified the word to "baryta," in

which form it still survives. Subsequently baryta was found to be the oxide of a new metal, which was isolated by electrolysis in 1808 by Berzelius and Pontin, and afterward by Davy, and named "barium." When absolutely pure, barium is a silver-white metal with the density of 3.78. It is a little harder than lead, melts at 1580° F., and vaporizes at 1760° F. It oxidizes rapidly in the air, and decomposes water readily. It is ductile and somewhat malleable. Powdered barium takes fire spontaneously. Its atomic weight is 137.4 (O = 16), and its chemical symbol is Ba. Its specific gravity appears to be between 3.75 and 4.00. Barium occurs in nature in all primary rocks and in some mineral waters. The most common sources of barium compounds are the carbonate and sulphate, which occur native as witherite and barite (qq.v.), respectively. The nitrate is prepared by acting upon the native carbonate with nitric acid. It is a soluble salt, with the formula $Ba(NO_3)_2$. The nitrate decomposes upon being strongly heated, the nitric acid being expelled, while barium monoxide (or baryta), BaO, is left behind as a gray, porous mass, strongly caustic and alkaline. When gently heated in air, barium monoxide takes up another molecule of oxygen and forms the dioxide, $BaO_2$; and on being more strongly heated, the dioxide gives up the extra atom of oxygen again, and returns to the monoxide. It was long ago proposed to make use of this curious property for isolating pure oxygen from the air, by alternately heating the dioxide at a high temperature, and collecting the oxygen given off as it returns to the monoxide and then submitting it, at a lower temperature, to the action of a current of air until it has again passed into the state of dioxide. It was found, however, that the process would work only for a short time, after which a fresh supply of baryta was required. Recent investigations have gone far toward discovering the cause of this loss of activity, and it is now likely that oxygen will sometime be made on a commercial scale by this most ingenious process. Baryta absorbs water with considerable evolution of heat and the formation of a hydrate, $Ba(OH)_2$, which crystallizes with eight molecules of water. Barium hydrate is also made, in large quantities and at a low price, at Niagara Falls, by the electrolysis of soluble salts of barium. The hydrate is used in refining sugar, being much superior to lime for this purpose. With cane sugar it forms an insoluble compound from which the sugar may afterward be set free by a current of carbon dioxide gas. The hydrate is also likely to be of great use, in the near future, for preventing the formation of boiler scale, by precipitating the carbonates and sulphates in the feed water, in the form of insoluble barium compounds. The value of barium hydrate for this purpose has long been known, but until the development of the electrolytic method of manufacturing it, the expense involved was prohibitive. Barium sulphate (barite) is thrown down as a precipitate whenever a soluble barium compound is added to a solution of any sulphate; and for this reason soluble barium salts are much used by the chemist in testing for sulphuric acid and sulphates. The chloride ($BaCl_2$) is the salt most commonly employed as a reagent for this purpose. Barium sulphate is one of the most insoluble salts known. The native sulphate, when ground up, was formerly used to adulterate white lead. The artificial sulphate was also used for this purpose and is itself used as a paint, under the name of "permanent white," or *blanc fixe*. The artificial sulphate is said to be superior to the natural mineral for use as a paint, as it has more "body." In ready-mixed paints, white, ground and hydrate barite is employed as a pigment. With 30 per cent of zinc sulphate, 70 per cent of barite is mixed to form the white pigment called "lithopone," which is used extensively as a "flat" wall paint. Barite is also used in the manufacture of glazed and coated paper. When barium sulphate is heated with coal it loses its oxygen, and becomes reduced to the sulphide BaS, a salt which is highly phosphorescent, and is known as Bologna phosphorus. After exposure to sunlight or to a strong artificial light, barium sulphide shines for hours with a bright, golden light. It is used in the manufacture of luminous paint. The sulphide may be heated in an earthenware retort through which moist carbonic acid gas is being passed, and baryta caustic thus obtained. Barium is readily recognized by the spectroscope through a number of characteristic green lines. Its volatile salts communicate a green color to non-luminous flames, and are used (especially the nitrate) in pyrotechny.

In poisoning by the barium salts the symptoms resemble those seen in poisoning by other metals. In the acute forms there is pain and burning in the mouth and stomach, nausea, vomiting and chills. These are followed by diarrhœa, dizziness and chilly feelings. The pulse is slowed, at first large and full, later small and scarcely recognizable. Muscle paralysis supervenes with dyspnœa, loss of consciousness, convulsions and death. The remedial treatment consists of prompt washing of the stomach with a solution of Glauber's salts. This forms the insoluble barium sulphate, which is inert.

Previous to the European War there was no barite industry in the United States. The entire supply was imported from Germany at a price with which the American manufacturers could not compete, although many attempts were made to do so. Within a few weeks after the war began, an idle plant at Sweetwater, Tenn., had started up, and has been working night and day ever since. Mines are in operation in southeastern Missouri, northwestern Georgia, central and western Kentucky, northeastern Alabama, southwestern North Carolina, northwestern South Carolina and southwestern Virginia. The production in 1915 amounted to 108,547 short tons — more than twice the production of 1914. For 1916 the output was double that of 1915, and reached a value of $1,000,000. Barite mines were opened in 1916 in Colorado, Nevada, California and Alaska. The only deposit of witherite of commercial value known in the United States is in Mariposa County, Cal.

About 10 per cent of the output is used in the manufacture of barium salts — the carbonate, nitrate, chloride, chlorate, hydrate and binoxide; all heretofore imported from Germany. Of the barium chemicals the most important is

the binoxide on account of its use in the preparation of hydrogen peroxide.

**BAR-JESUS**, or **ELYMAS**, a Jewish sorcerer who opposed Paul before Sergius Paulus at Paphos in Cyprus and was smitten with blindness (Acts xiii, 6–12). There is difficulty in regard to his name, as in verse 6 he is called Bar-Jesus and in verse 8 Elymas. By some Elymas is explained by an Arabic root as "the Wise Man." Others regard Elymas as his name and Bar-Jesus as a Christian name designating him after his conversion to the new religion. In regard to the entire story considerable difficulty is experienced in its interpretation. It is closely similar to the story of Simon Magus in Acts viii, and many commentators see in it a defense of Paul against his identification with the Magian then so common among Judaizing Christians. For a full discussion of Bar Jesus and the passage in Acts xiii consult Krenkel, 'Josephus und Lucas' (Leipzig 1894).

**BARK**, the more or less easily separable layers of tissue surrounding the woody cylinder of trees and shrubs; also, by extension, the analogous part (cortex) of textile plants such as hemp, jute, ramie, flax, etc., and other annual stems. The layers are divided into three groups which may be readily seen in a yearling stem: (1) The phloëm, bast, the inner food-conducting tissue annually thickened from the cambium (q.v.) layer which separates it from the wood; (2) the green zone which generally does not increase in thickness but which in young twigs assists in food elaboration (see PHOTOSYNTHESIS); (3) the epidermis or external layer with contiguous cork cells which increase from the phellogen, or cork cambium, a layer of epidermal or cortical cells. These cork cells, which develop mainly at right angles to the direction of the stem, die and become more or less weather-beaten and seamed from cracking and give the characteristic appearance to tree trunks. Many trees can be identified by their bark alone.

The bark of many trees and shrubs is of economic use mainly in tanning, dyeing, medicine and cookery. In tanning (q.v.) such barks as are rich in tannic acid are most in demand; oak, hemlock and chestnut (qq.v.) are general favorites in America and Europe; eucalyptus and acacia in Australia. Larch and willow bark are used for special work. To obtain these barks the trees are felled after the sap has started to flow in the spring, the rough exterior layers removed, the bark of the trunk and main limbs peeled off in lengths of about two feet with specially made tools; the bark of the smaller branches, in equal lengths, is loosened with mallets and slipped off. After removal the bark is loosely piled in open sheds to dry or stacked on end in the open air, the larger pieces being placed on the outside to protect the smaller inner ones from rain and sun, which together with mildew are the important agencies that may injure the quality of the product. The barks used in medicine, cookery, etc., are treated under individual titles. See CASCARILLA, CINCHONA and CINNAMON; also CORK.

**BARK, Peruvian.** A bark obtained from several trees belonging to the genus *Cinchona*, which grow spontaneously in many parts of South America, but more particularly of Peru. The trees somewhat resemble a cherry-tree in appearance, and have white or pink flowers. This valuable medicine was formerly called Jesuit's Bark, from having been introduced into Europe by the members of that Order settled in South America. They were instructed in its use by the natives of Peru, and it continued for many years a source of profit to the Order. Its botanical name was derived from that of the Countess del Chinchon, the lady of a Spanish viceroy, who had been cured by it. The tree from which it is obtained grows abundantly in the forests of Quito and Peru, and the bark is cut by the natives in the months of September, October and November, during which alone the weather is free from rain. The bark is of three kinds — red, yellow and pale, of which the yellow and pale barks are the stronger in their febrifuge properties. The crown-bark, as the highest-priced is termed, is of a pale yellowish-red. The pale is the original Peruvian cinchona, and is produced by several varieties of the *Cinchona officinalis*. The red is obtained from the *C. succidubra*, which grows chiefly in the forests of Ecuador around Chimborazo. The yellow sort is produced by the *C. calisaya*, and grows in Bolivia and Peru.

The uses of the bark in medicine are too well known to need description; but the chemical discoveries in relation to it are deserving of more particular mention. Its medicinal properties were found to depend upon the presence of a substance called quinine. This exists, more or less, in all kinds of Peruvian-bark, but in quantities very unequal in the various kinds. See QUININE.

**BARK**, or **BARQUE**, a three-masted vessel whose foremast and mainmast are square-rigged, but whose mizzenmast has fore-and-aft sails only. The distinction between a bark and a barkentine is that the latter has but one mast square-rigged, the main and mizzen being both rigged fore-and-aft.

**BARK-BEETLES**, members of the family *Scolytidæ*, and allied to the weevils. They are of an elongate cylindrical form, truncated before and behind. They mine under the bark of trees, running their winding galleries in every direction, but rarely attack living healthy trees. They are usually brown or black in color. The rounded head does not end in a snout and is deeply sunken in the thorax; the clavate antennæ are somewhat elbowed, while the palpi are very short; the elytra are often hollowed at the end, and the short stout legs are toothed on the under side of the femora, and the tarsi are slender and narrow. The eggs are laid in the bark, whence the larvæ on being hatched bore straight into the sap wood, or mine between the bark and the sap wood. They are fleshy, cylindrical, footless larvæ, wrinkled on the back. When fully grown in the autumn they gnaw an exit for the beetle, taking care to leave a little space closed in front of their burrow to conceal the pupa. The various species of Scolytus, Tomicus and Xyloterus give rise to a disease similar to fireblight, by their ravages beneath the twigs of fruit trees, causing the bark to shrivel and peel off as if a fire had run through the orchard. *Xyloterus fuscatus* has been found to bore into empty wine casks and spoil them for use. The spruce forests of Maine and other parts of northern New Eng-

land have, since 1818, been devastated by *Dendrocotonus piceaperda* of Hopkins. It attacks and kills vigorous trees in perfect health, the largest and best stands of timber suffering most from its ravages. The estimated number of adults which under favorable conditions may emerge from an average-sized tree is from 5,000 to 7,000. Hopkins estimated that an average of three pairs of beetles to the square foot of bark on 10 to 15 feet of the trunk of an average-sized tree are sufficient to kill it, and that 6,000 beetles breeding in one tree may be sufficient to kill from 20 to 25 more trees. Two other beetles (*Polygraphus sufipennis* and *Tetropium cinnamopterum*) also aid the Deudrocotonus in killing the spruce. Consult Packard, 'Report on the Insects Injurious to Forest and Shade Trees' (1890); Hopkins, 'Insect Enemies of the Spruce in the Northeast' (Bulletin No. 28, Division of Entomology, United States Department of Agriculture, 1891).

**BARK-LOUSE,** a hemipterous insect of the scale family (*Coccidæ*). The bark-lice are very small insects, whose females are wingless, their bodies resembling scales. The females sting the bark of trees with a long slender beak, sucking in the sap, and, when very numerous, injure or kill the tree. The males have two wings but no beak, and take no food. The apple bark-louse (*Mytilaspis pomorum*) is destructive to young apple-trees, while in Florida *M. gloveri* is a pest of the orange, as is also the San José scale-insect (q.v.). The cochineal, the mealy-bug of hothouses, and various other coccid insects, belong to this group. See SCALE-INSECTS, and the names of various species.

**BARKAL,** or **JEBEL BARKAL,** an isolated sandstone rock, 400 feet high, in Nubia, near the Fourth Cataract of the Nile. It is nearly perpendicular on all sides, but fully so on the side nearest the Nile. There are some remarkable ruins in the vicinity. Excavations here have revealed inscriptions and archæological remains of great interest and value, an account of which may be found in Lepsius' 'Denkmäler,' Vol. V.

**BARKER, Albert Smith,** American naval officer: b. Massachusetts, March 1843. He was graduated at the United States Naval Academy in 1859; served on the frigate *Mississippi* in the operations to open the Mississippi River in 1861–63, taking part in the bombardment and passage of Forts Jackson and Saint Philip and the Chalmette batteries, the capture of New Orleans and the attempted passage of Port Hudson, where his vessel was destroyed. He became captain 5 May 1892; commanded the cruiser *Newark* during the war with Spain; subsequently succeeded to the command of the battleship *Oregon,* which he took to Manila. He became a rear-admiral, and was placed in command of the Norfolk Navy Yard in 1899; and in July 1900 succeeded the late Rear-Admiral Philip as commandant of the Brooklyn Navy Yard. He was appointed commander-in-chief of the north Atlantic fleet (1903–05); was retired 31 March 1905. He was the first one in the United States to fire high explosives in shells.

**BARKER, Edmund Henry,** English philologist: b. Hollym, Yorkshire, December 1788; d London, 21 March 1839. He undertook the labor of reprinting the 'Thesaurus Græcus' of H. Stephens, upon which was expended an immense amount of time and money, but owing to severe adverse criticisms, the work did not appear in the form which was originally intended, or under his name. His first work, 'Classical Recreations,' appeared in London, 1812; one volume only was published. He also wrote dissertations, essays, etc., for reviews; a work upon the claims of Sir Philip Francis to the authorship of the Junius letters; a Greek and English dictionary, etc. In the latter part of his life he became so reduced through litigation that he was at one time confined in a debtors' prison, and finally died in an obscure lodging-house in extreme want.

**BARKER, George Frederick,** American physicist: b. Charlestown, Mass., 14 July 1835; d. 1910. He was graduated from Sheffield Scientific School at Yale, 1858, and Albany Medical College, 1863, and taught at Harvard and Yale universities, Wheaton College (Ill.) and Western University of Pennsylvania. From 1873 to 1900 he was professor of physics in the University of Pennsylvania. He became professor emeritus in 1900. He was a United States commissioner at the International Electrical Exhibition at Paris, 1881, where he received the Legion of Honor decoration, with rank of commander. He frequently served as an expert in patent and other cases, notably as a government expert in the suit against the American Bell Telephone Company and in the Lydia Sherman poisoning case in 1872. He was president of the American Association for the Advancement of Science; president of the American Chemical Society and vice-president of the American Philosophical Society. His publications have chiefly appeared in the *American Journal of Science, American Chemist* and *Proceedings of the American Philosophical Society.* Others are, besides textbooks on chemistry, 'Nitrous-Oxide' (1866); 'Correlation of Vital and Physical Forces' (1871); 'Progress in Physics' (1892). For several years he contributed to the Smithsonian reports.

**BARKER, Jacob,** American financier: b. Swan Island, Me., 7 Dec. 1779; d. Philadelphia, 26 Dec. 1871. He early developed remarkable business ability, settled in New York, and before he was 21 owned five trading vessels and controlled a large credit. In 1801 he met with heavy reverses, but obtaining a government contract for supplying oil, made up his losses, and at the outbreak of the War of 1812, undertook the raising of a loan of $5,000,000 for the government. He was a founder of Tammany Hall, and a State senator, and established the Exchange Bank in Wall street in 1815 which failed in 1819. His financial methods aroused intense opposition and he was indicted for fraud in 1826 and convicted, but a new trial quashed the indictment. Removing to New Orleans in 1834, he was admitted to the bar and accumulated a large fortune that was mostly lost during the Civil War. He was elected to the United States Senate at the close of the war, but was not allowed to take his seat. In 1867 he was declared bankrupt and during the latter part of his life he lived in Philadelphia with his son, Wharton Barker. He published 'The Rebellion: Its Consequences and the Congressional Committee, Denominated

the Reconstruction Committee, with Their Action' (1866). Consult 'Incidents in the Life of Jacob Barker, 1800–1855' (New York 1855); Turner, 'The Conspiracy Trials of 1826 and 1827: A Chapter in the Life of Jacob Barker' (Philadelphia 1864); 'The Speeches of Jacob Barker and His Counsel on the Trials for Conspiracy' (New York 1826); and 'The Trial of Jacob Barker, Thomas Vermilya and Matthew L. Davis' (ib. 1827).

**BARKER, J. Ellis,** English author and journalist: b. Cologne, Germany, 9 May 1870. He was educated at Cologne, and after his return to England became known as a contributor to the leading reviews and lectured before the Royal United Service Institution, the Medical Association and the Liberal Union Club. He has published 'The Rise and Decline of the Netherlands' (1906); 'British Socialism' (1908); 'Modern Germany' (1908; 4th ed., rev. 1912); 'Great and Greater Britain: The Problems of Motherland and Empire' (1910); 'Points Against Free Trade'; 'Points for Tariff Reform'; and numerous contributions to the *Nineteenth Century Review, Fortnightly Review, National Review* and to the leading London and provincial dailies.

**BARKER, Lewellys Franklin,** Canadian-American anatomist: b. Norwich, Ont., 1867. He was professor and head of the department of anatomy in the Rush Medical College of University of Chicago, 1900–05, and professor of medicine Johns Hopkins University and chief physician Johns Hopkins Hospital since 1905. He is author of 'The Nervous System and Its Constituent Neurones' (1899); 'Laboratory Manual of Human Anatomy' (1904).

**BARKER, Thomas Jones,** English historical portrait painter: b. Bath 1815; d. 1882. He studied his art in Paris under Horace Vernet, and exhibited regularly at the Salon from 1835 to 1845, and afterwards at the Royal Academy. He was an eye-witness of many episodes of the Franco-Prussian War of 1870, of which he has left several pictures. His most noteworthy works are 'The Bride of Death' (1840); 'The Meeting of Wellington and Blücher' (1851); 'Wellington Crossing the Pyrenees'; 'The Mêlée—Charge of Cuirassiers and Chasseurs' (1872); 'Balaklava—One of the Six Hundred' (1874); 'The Return Through the Valley of Death' (1876).

**BARKER, Wharton,** American financier and publicist: b. Philadelphia, 1 May 1846. He was graduated at the University of Pennsylvania in 1866, became a member of the banking firm of Parker Brothers & Company, in which capacity he became special financial agent of the Russian government. He supervised the building of four cruisers for Russia and went to that country to advise concerning the development of coal and iron mining. He obtained valuable railroad and telegraph interests in China, but his concessions in that country were soon withdrawn. In 1869 he founded a periodical devoted to political, economic and social conditions, called the *Penn Monthly*. He proposed the names of Garfield and Harrison for the presidency, and strenuously opposed a third term for General Grant. He joined the Populist party in 1896 and soon gained prominence in the party, becoming its candidate for the presidency in 1900. He is a member of several learned societies. He has traveled extensively in the United States, Europe, China, Japan and South America, and is a leading advocate of a commercial union of all American nations and opponent of all temporary arbitration treaties.

**BARKER'S MILL,** a form of waterwheel devised by Dr. Barker, some 300 years ago. It turns about a vertical axis, down which the water that is to operate it flows. At the lower extremity of the vertical axis two or more hollow arms project horizontally, like the spokes of a wheel. Water is discharged tangentially from the ends of these hollow arms, and by its reaction causes the wheel to rotate. Barker's mill is now used only as a toy, although a modification of it, invented by Whitelaw, is still used, to some extent, as a source of power in Great Britain, where it is known as the Scotch turbine. See TURBINE.

**BARKING,** England, town in Essex, on the left bank of the Roding, about two miles above its junction with the Thames, and seven miles northeast from London. It has a parish church, a handsome structure, with a lofty tower, and some fine public buildings. There are also the ruins of Barking Abbey, at one time among the wealthiest nunneries of England. Pop. 22,000.

**BARKING WOLF,** a name in early American books for the prairie wolf or coyote, on account of the greater resemblance in its voice to the barking of a dog than to the howl of the wolf. See COYOTE.

**BARKIS,** a rustic figure in Dickens' 'David Copperfield.' He proposes to David's nurse, Peggotty, in the since famous phrase "Barkis is willin'."

**BARKLEY, Charles William,** navigator: b. 1759; d. North Crescent, Hartford, 1832. He left Ostend for the northwest coast of America in the autumn of 1786 in the *Imperial Eagle*, and in July of the succeeding year he discovered the long-lost strait of Juan de Fuca, between Vancouver Island and the mainland of the United States, which he charted under the name of the Greek seaman, its first discoverer. Barkley Sound, Vancouver Island, was also discovered and named by him.

**BARLAAM,** bär'lą-ăm, Italian theologian: b. Seminaria, Calabria; d. about 1348. He was a monk of Saint Basil, noted for his learning, and particularly for his thorough knowledge of the Greek language. In 1327 he visited Constantinople, and in 1331 he was appointed abbot of the convent of Saint Salvator. In 1339 the kings of France and Sicily sent Barlaam in vain to Pope Benedict XII at Avignon, for the purpose of obtaining assistance against the Mohammedans, and of arranging a union between the Greek and Latin Churches. Henceforth he was engaged in various religious controversies, and was defeated in them all. He finally entered the Roman Catholic Church, and through the influence of his friend, Petrarch, received from Pope Clement VI the bishopric of Geraci.

**BARLAAM AND JOSAPHAT,** one of the most popular of early mediæval romances, formerly supposed to have been written by

Saint John of Damascus,—or Damascenus, as he is sometimes called,—a Syrian monk born about the end of the 7th century. According to the narrative Josaphat was the son of a king of India brought up in magnificent seclusion, to the end that he might know nothing of human misery. Despite his father's care, the knowledge of sickness, poverty and death cannot be hidden from him: he is oppressed by the mystery of existence. A Christian hermit, Barlaam, finds his way to him at the risk of life, and succeeds in converting him to Christianity. The prince uses his influence to promote the new faith among his people. When he has raised his kingdom to high prosperity, he leaves it to spend the remainder of his days as a holy hermit. The story is, with the necessary changes, substantially the story of Buddha. The correspondences of the two stories are most minute, and even the phraseology, in which some of the details of Josaphat's history are described, is almost a literal rendering of the Sanskrit of the 'Lalita Vistara.' Even the very word Josaphat or Joasaph (Arabic, Yudasatf) is a corrupt form of Bodisat, or Bodisatva, a common title for the Buddha in the many birth-stories that clustered round the life of the sage. The identity of the stories of Buddha and Josaphat was first recognized by Diogo do Couto (1542–1616), the historian of Portuguese India. In modern times it was noticed by Laboulaye in the *Journal des Débats* (July 1859). A year later Dr. Felix Liebrecht made an elaborate treatment of the subject, putting the identity of the stories beyond dispute. Subsequent researches were made by Max Müller, Zotenberg and others. The original Greek manuscript was first published by M. de Boissonade as a volume of his 'Anecdota' (Paris 1832), and translated into German by Liebrecht (Münster 1847). A Latin version was current in the Middle Ages, and about the 15th century began to appear among the works of Saint John Damascenus. But it is no longer ascribed to him. The legend appeared in the 'Speculum Historiale' of Vincent of Beauvais, and also in the 'Golden Legend' of Jacobus de Veragine. Three poetical versions in French of the 13th century are also extant. There are also Italian and German versions derived from the mediæval Latin. The Spanish, Polish and Bohemian versions are also from this source. There are also versions in Icelandic, Swedish, Norwegian and even a version in the Tagalog language of the Philippines (Manila 1712). The names of Barlaam and Josaphat appear in both the Greek and Roman lists of saints. Their names were inserted by Petrus de Natalibus in his 'Catalogus Sanctorum' (1380) and Cardinal Baronius included them in the official 'Martyrologium' authorized by Sixtus V (1585–90) under the date of 27 November. In the Orthodox Eastern Church "the holy Josaph, son of Abener, King of India" is allotted the 26th of August. Thus Gautama the Buddha is officially, albeit unwittingly, recognized as a saint in two great branches of the Christian Church. In Palermo there is a church dedicated to Divo Josaphat. The compilers of the 'Gesta Romanorum,' Boccaccio, Gower and Shakespeare have all drawn materials from this romance. Consult Appel, 'Gui von Cambrai und Josaphas nach den Handschriften von Paris und Monte Cassino' (Halle 1907); Jacobs, Joseph, 'Barlaam and Josaphat' (London 1896); Liebrecht, 'Zur Volkskunde' (Heilbronn 1879); Müller, Max, 'Selected Essays' (London 1881); Zotenberg, H., 'Notice sur le livre de Barlaam et Joasaph' (Paris 1886).

**BARLAAMITES**, in ecclesiastical history, followers of Barlaam, a Latin monk of the 14th centnry; known chiefly from their controversy with the Quietist monks of Mount Athos. Consult Gibbon, 'Roman Empire.'

**BARLÆUS**, bär-lē'ŭs, or **BÆRLE, Kaspar van**, Dutch historian and learned writer: b. Antwerp, 12 Feb. 1584; d. Amsterdam, 14 Jan. 1648. His 'Poems,' mostly Latin, are not forcible, but his 'History of Brazil under Maurice of Nassau' is decidedly so; and he composed also numerous fine orations, the influence he exercised upon contemporary thought being very considerable.

**BARLETTA**, bär-lĕt'ta, **Gabriello**, Italian monk: b. perhaps at Barletta, in the kingdom of Naples, in the 15th century. He became celebrated at Naples on account of his sermons, in which he mixed sarcasm and the ludicrous with the sacred; quoting, now Virgil, now Moses; placing David at the side of Hercules; and commencing a sentence in Italian to continue it in Latin and end it in Greek. Sometimes he forgot himself so far as to use expressions of which he had not considered the signification, as when he asked by what signs the Samaritan knew Jesus was a Jew. Very serious authors, Niceron and others, have given the response of the preacher, but it cannot be reproduced here. There is under his name a collection of Latin sermons, which have gone through more than 20 editions.

**BARLETTA**, Italy, seaport town on the west shore of the Adriatic, 33 miles northwest of Bari. In the market-place is a colossal bronze statue, about 18 feet high, supposed to represent the Emperor Heraclius. A statue of the statesman Massimo d'Azeglio, who died in 1866, adorns another square. The cathedral is a fine Byzantine edifice, the nave of which is supported by antique granite columns. There are several other churches, convents for both sexes, an orphan institution, a college founded by Ferdinand IV and a theatre. The harbor is formed by a mole running out from the shore. It admits of small vessels only, but good anchorage ground is found in the roadstead. Barletta has a considerable trade in grain, wine, almonds and the other productions of the country, which are exported to the different ports of the Adriatic. Pop. 44,200.

**BARLEY** (A. S. *bærlic*, from *bere*, barley +*leac*, a leek, plant); genus *Hordeum;* our fourth most important cereal. It belongs to the *Poaceæ* or grass family, and is one of the oldest of the cultivated members of this family. It was cultivated in ancient Egypt (Exod. ix, 31) by the Greeks and Romans. Pliny regarded it as the most ancient food of mankind. It has been found in the lake dwellings of Switzerland in deposits belonging to the Stone Age. Ears of barley are represented plaited in the hair of the goddess Ceres, and are also shown on ancient coins. One of the sacred books of the Chinese claims that it was grown in China 2000 B.C. It grows wild in western Asia, and

this is probably its original home. It is adapted to both warm and cold climates, has a wider range of distribution than any other cereal, being grown all over the region embraced in the temperate zones, from Alaska, Iceland and Norway in the north to Algeria, Egypt, India and other subtropical countries. The Nepaul or Himalaya barley is very hardy, producing good crops at an elevation of 14,000 feet above the sea. In Chile and Switzerland it thrives at 5,000 feet, but on the plateaus of Peru it rarely ripens.

Barley is divided into several types, of which the following are recognized: Two-rowed barley, *Hordeum distichon;* four-rowed barley, *H. vulgare,* the common barley, bere or bigg; six-rowed barley, *H. hexastichon;* naked barley, *H. distichon nudum,* the scales not adhering to the grain as in other types; fan, spratt, or Brattledore barley, *H. zeocriton,* two-rowed with wide-spreading awns; this is valued in Germany and is sometimes called German rice. These types are further subdivided into varieties, the most popular for malting belonging to the two-rowed type. The best known is the Chevalier, which originated in Suffolk, England, in 1819. This variety and selections from it constitute the high-priced barley of California. In Europe the two-rowed type predominates. In this country the six-rowed is more common. The four-rowed varieties were formerly used for malting; they are hardy and productive but coarse, and are being replaced by the two-rowed. In northern latitudes well-drained and fertile medium or rather light soils, particularly those of a calcareous nature, are best. Strong loams, heavy clays and soils rich in humus, produce heavy crops, but of inferior quality. In southern latitudes medium to heavy loams are best. Climate and season are of more importance than soil in determining whether the barley will be a good malting variety or not. A rather dry climate suits well. The climate of eastern and southeastern England produces the best malting barley. It may be sown broadcast or drilled, but the latter method is more satisfactory. Fall-sown varieties are handled like fall-sown wheat, but it is generally sown in the spring after spring-wheat sowing is over. The amount sown varies from two to three bushels per acre. It germinates quickly, and late spring frosts may injure it. Fertilizers when applied must be evenly distributed or an uneven growth will result. It ripens before spring wheat, and should be fully ripe before it is cut. The color and value of the grain is easily injured by damp weather. From 30 to 40 bushels of grain and 1,500 to 2,200 pounds of straw is a good yield. Sometimes this yield of grain is doubled. A good malting variety must have quick, high and even germinating power; the grains must be plump, heavy, thin-husked and uniform in size; of good bright color, not «steely» or bleached, indicating immaturity when cut, nor musty; must contain a high percentage of starch, mealy not flinty, showing that the starch can be readily transformed during malting. Barley is sometimes attacked by rust and smut, but less so than wheat. (See WHEAT). Wireworms are sometimes troublesome. The production of barley in the United States is increasing. In 1866, 7,916,342 bushels were grown on 492,532 acres. In 1916, 180,927,000 bushels on 7,674,000 acres. The four leading States in 1916 were California, 33,320,000 bushels; Minnesota, 26,125,000 bushels; North Dakota, 26,738,000 bushels; South Dakota, 18,728,000 bushel. The average yield for the year 1916 was 23.6 bushels per acre. The average farm value 88.2c per bushel.

**Feeding Value and Uses.**— The average percentage composition of barley is, water, 10.9; proteids, 12.4; nitrogen-free extract, chiefly starch, 69.8; ether extract, 1.8; crude fibre, 2.7; ash, 2.4. Digestion experiments with pigs showed that 80 per cent of the dry matter, 81 per cent of the protein, 87 per cent of the nitrogen-free extract, and 57 per cent of the ether extract were digestible. Barley is chiefly used for malting, for the preparation of spirits, beer and malted foods. It is also employed in domestic cookery as «pot or hulled barley» in which only the husks are removed; «pearl barley» is the grain deprived of husks and pellicle, then ground to a round form and polished; «patent barley» is flour obtained by grinding pearl barley. It is used in soups, for making demulcent and emollient drinks for invalids and for other purposes. Barley bread is darker in color and less nutritious than that from wheat flour; it does not contain gluten, but is fairly rich in other proteids.

Barley, or decoctions of it, are used to modify cows' milk for feeding to infants. Barley meal and the by-products, barley bean, barley feed (from pearled barley), screenings, malt combs and brewers' grains are used as stock feeds. Its use for horse feed in the United States is confined to the Pacific coast. For other stock its use is more general. It may be fed alone or with other grain. Barley hay is grown, the crop being cut before the grain is mature. As a forage crop or pasture it may be grown alone or with peas, vetches or other quick-growing legumes. Barley straw is usually considered as not worth feeding, but may be used as bedding.

**BARLEY BREAK,** a game once common and often mentioned by old English writers. It was played by six young people, three of either sex, formed into couples, a young man and a young woman in each, it being decided by lot which individuals were to be paired together. A piece of ground was then divided into three spaces, of which the central one was profanely termed hell. This was assigned to a couple as their appropriate place. The couples who occupied the other spaces then advanced as near as they dared to the central one to tempt the doomed pair, who with one of their hands locked in that of their partner, endeavored with the other to grasp them and draw them into the central space. If they succeeded, they were then allowed themselves to emerge from it, the couple caught taking their places. That the game might not be too speedily finished, leave was given to the couple in danger of being taken to break hands and individually try to escape, while no such liberty was accorded to those attempting to seize them.

**BARLEYCORN, John,** a personification of the spirit of barley, or malt liquor. It is commonly used jocularly, and in humorous verse. Dr. Murray's 'Dictionary' quotes a title in the Pepysian Library, about 1620, «A pleas-

ant new ballad . . . of the bloody murther of Sir John Barleycorn.» Burns' ballad on John Barleycorn is well known.

**BARLOW, Joel,** American poet and diplomatist: b. Redding, Conn., 24 March 1754; d. near Cracow, Poland, 24 Dec. 1812. In 1774 he was placed at Dartmouth College, New Hampshire, and after a short residence entered Yale College, New Haven, where he displayed a talent for versification, which gained him the friendship of Dr. Dwight, then a tutor there. Barlow, more than once during the vacations of the college, served as a volunteer in the army of the Revolution. In 1778 he applied himself to the study of law, but soon after accepted the position of chaplain in the army, which he held till the close of the war (1783). During this period his songs and addresses were said to have animated and encouraged the soldiers; at this time, too, he planned and partly composed his 'Vision of Columbus.' He went to Hartford, where he started a weekly newspaper, continuing at same time the preparation of his poem for the press. It was published in 1787, and some months after in London. To promote the sale of his poem, and that of a new edition of the Psalms adapted by him, Barlow gave up the newspaper and became a bookseller. In 1788 we find him in France as agent for speculators in land, called the Scioto (Ohio) Land Company. The Revolution was then in progress, and Barlow went about lecturing and organizing societies in its favor. He went to England in 1791, and was deputed in the following year by the London Constitutional Society to present an address to the French Convention. In 1795 he was appointed American consul at Algiers, a post he held for only two years. Returning to Paris he made some successful commercial speculations and acquired a considerable fortune. He returned, after an absence of 17 years, to his native country (1805). In 1811 he was appointed Minister-plenipotentiary to France. In the following year, owing to the fatigues and privations of a journey to Wilna to hold a conference with Napoleon, he died at an obscure village near Cracow. His principal poem, the 'Columbiad,' has never been popular; it is defective in plan and execution, overloaded with philosophical discussions and political tirades, and disfigured by pedantic and uncouth words of his own coinage. His prose writings bear the stamp of an active and energetic intellect, but lack that ripeness of judgment required by the complex nature of the subjects he examines. Consult Todd, 'Life and Letters of Joel Barlow' (1886).

**BARLOW, Peter,** English physicist and mathematician: b. Norwich, October 1776; d. 1 March 1862. He was professor of mathematics in the Royal Military Academy at Woolwich for a period of 40 years. His greatest work is the 'Mathematical and Philosophical Dictionary' (1814). He was also the author of an elaborate work on the 'Machinery and Manufactures of Great Britain' (1837); of a treatise on the 'Force and Rapidity of Locomotives' (1838); and of an 'Essay on Magnetic Attraction,' one of the first works in which the phenomena of magnetism were distinctly enunciated. He invented the Barlow lens.

**BARLOW, William Henry,** English engineer: b. 10 May 1812; d. 12 Nov. 1902. He was educated for the engineering profession, invented the saddleback form of rail which bears his name, and among his more notable achievements is the Saint Pancras terminal station in London. He was consulted in regard to the reconstruction of the Tay Bridge after its fall in 1879. In 1876 he visited the United States as one of the judges of the Centennial Commission. He published 'Illumination of Lighthouses'; 'Diurnal Electric Tides and Storms'; 'The Resistance of Flexure in Beams'; 'The Logograph.'

**BARLOWE, Arthur,** English navigator: b. about 1550; d. about 1620. In 1584 he was sent with Philip Amidas to select a suitable location for Raleigh's proposed American colony. They explored the coast of North Carolina and on their return to England Barlowe wrote an enthusiastic description of the attractions of the land they had visited.

**BARLOWS DISEASE.** See SCURVY.

**BARM.** See YEAST.

**BARMECIDES,** a celebrated Persian family, whose virtues and splendor form a favorite subject for Mohammedan poets and historians. Two eminent members were Khaled-ben-Barmek, Prime Minister of Caliph Abul Abbas Al-Saffah and tutor of the celebrated Harun al-Raschid, and his son Yahya, Grand Vizier of Harun. The expression Barmecides' Feast, meaning a visionary banquet or make-believe entertainment, originates from a story in the Arabian Nights' Entertainments, of a wealthy Barmecide, to whom a poor man, Schacabac, had applied for charity. On the latter informing him that he was starving, the Barmecide invited him to dinner; and calling for a succession of the most sumptuous viands, although none were provided, urged his guest to fall to and enjoy himself, praising the merits of each dish as it was pretended to arrive on the table. Schacabac, although suffering all the pangs of hunger, entered into the humor of his host, declared his infinite enjoyment of everything set before him and by his patience so won the heart of his eccentric entertainer that the latter not only provided for him immediately an actual and plenteous repast, but likewise took him into his house and entrusted him with the management of his affairs.

**BARMECIDES' FEAST.** See BARMECIDES.

**BARMEN,** Germany, city on the Wupper, in the province of Rhenish Prussia. The town of Barmen is formed by the union of seven villages located in the valley of Barmen, from which it takes its name, and its western border adjoins the city of Elberfeld. It is the seat of the Rhenish Missionary Society, which has here a large seminary. The valley is remarkable for natural beauty. The United States has a resident consul. Barmen contains the principal ribbon manufactories on the Continent and its ribbons are sent into all parts of the world. Next to ribbons the most important textile manufactures are zanellas or Indian cloths, satin for lining, and lace. Barmen also possesses numerous large dye works, besides manufactures of chemicals, plated and

other metal wares, buttons, yarns, iron, machines, pianos, organs, soap, etc. There are also in the valley numerous bleachfields and Turkey-red dye works. The city has six railway stations and one of its remarkable features is the electric swinging railway over and along the line of the Wupper between Barmen and Sonnborn. Lower Barmen has a mineral spring and a bathing establishment. Pop. 169,214.

**BARMOTE COURT** (from *berg*, hill, and *mote*, meeting), a name given to local courts held in the lead-mining portions of Derbyshire, England. Their purpose is the definition of the ancient rights of the inhabitants and the settlement of disputes connected therewith. They are of ancient origin, but their scope has been much restricted during the Victorian period. Consult Bainbridge, 'The Law of Mines and Minerals' (5th ed., 1900).

**BARN** (Saxon, *berern*, from *bere*, barley, and *ern*, a close place or repository). The word seems originally to have denoted a building for the storing of grain. In modern times it has a wider significance — all structures of any capacity used on a farm for storing crops and sheltering stock being known as barns. In the changeable climate of the United States, with its severe winters, protection to cattle becomes an important item in the operations of husbandry, and as our agriculture becomes more highly developed we construct more expensive, convenient and useful barns. A well-built barn, embracing all the conveniences needed for the easy and safe storing of crops and the comfort and well-being of farm stock, will always be one of the safest and best investments a farmer can make. At one time the barns on many estates were capacious enough to contain all the grain raised on them, but recently the practice of stacking grain has gained ground and it is now considered the better plan — building the grain barn of sufficient size to contain one or two ricks of grain at a time and all the necessary appurtenances for threshing. The stacked grain is kept in better condition from having a freer circulation of air and being so disposed as to be free from the attacks of vermin. A regular yard is set apart for stacks, elevated platforms are provided on which the stacks are built and they are so arranged as to prevent vermin from climbing to them from the ground and so far separated as to leave each stack isolated. Many such conveniences are known to the American farmer. The skeleton barn, a building but partially enclosed, spaces being left between the boards for the free ingress of air, with a durable roof and projecting eaves, is most used for grain and for the storing of hay loosely trussed for market. The sheep and stock barns on the continent of Europe are generally of an inferior character and usually serve also as a residence for the family of the servant or foreman of the farm. The sheep and stock barns of the United States are generally commodious structures with wide sheds on each side, in which the animals find shelter and receive their provender, or, when built on a side hill, the cellar is appropriated to this purpose. Sheds also surround the whole yard in many instances, while stacks of the poorer quality of hay and threshed straw occupy the centre of the yard, their contents being freely used as bedding and partial food for cattle, the greater bulk finding its way into the manure heap. These are both comfortable quarters for the animals and profitable for the farmer. Modifications of this general plan are made by each farmer according to his means and peculiar ideas. As a general rule, stock barns are found most profitable when they afford the most ample accommodations. The greater the comfort of his animals, the more uniform the profit of the farmer. Great care should be used in the selection of a place for the farm buildings. The barns should be easily reached and so arranged as to admit of the economical disposition of both crops and manures. The soil should be dry and porous or should be thoroughly drained. Ample provision should be made for the saving of manures. Side-hill barns afford cellars in which these may be kept without waste, their bulk augmented and those changes produced upon them which are so essential to their highest efficiency. If no good springs, streams or wells can be obtained, cisterns for rain water should be provided. Barns are usually built of wood, some of stone, a few of brick and of concrete or gravel wall. The gravel wall can be made cheaper than stone walls and can be built on farms affording only gravel and small stones of a quality too poor to build ordinary stone walls. Barn floors are usually of wood; and when intended for the threshing or handling of grain should be tight and smooth and kept clean. Oak, beech and yellow pine form excellent floors. The threshing floors described by Columella were formed by wetting the earth with the lees of oil, mixing in some chaff and ramming the whole down firmly; chaff was then trodden on the top, and the whole left to dry in the sun. The lees of oil were said to check vegetation, and to drive away vermin. The preparation of corrugated iron, at a comparatively cheap rate of cost, suggests that material as one of the best for a well-built barn. The roof deserves more attention than it usually receives at the hands of the farmer who wishes to be truly economical in his expenditure for buildings. Finally, let all farmers remember that ventilation is one of the most important things to be secured, especially in stock barns. The plan and construction of a barn varies with the purposes for which it is used. For detailed plans and internal fixtures for both stock and general barns consult Curtis, 'Farm Buildings for Land Owners, Agents, and Tenants' (London 1912); Dolve, 'Barn Plans,' North Dakota Experiment Station Bulletin 97 (Agricultural College, N. D., 1912); Hill, 'Practical Suggestions for Farm Buildings,' United States Department of Agriculture Farmers' Bulletins 126, 190 and 461 (Washington 1901, 1904 and 1912); McConnel, 'Farm Equipment: Buildings and Machinery' (New York 1910); Radford, 'Practical Barn Plans and All Kinds of Farm Buildings' (ib. 1911); id., 'Practical Country Buildings' (Wausau, Wis., 1912); Fraser, 'Economy of the Round Dairy Barn,' Illinois Experiment Station Bulletin 143 (Urbana 1910); Ocock, 'The King System of Ventilation,' Wisconsin Station Bulletin 250 (Madison 1908); Shaw and Jeffery, 'College

Farm Buildings,' Michigan Experiment Station Bulletin 250 (East Lansing 1907); 'Farm Buildings' (Chicago 1907); Winder, 'Handbook of Farm Buildings' (London 1908).

**BARN OWL,** a widespread but rather uncommon owl (*Strix flammea*) which seems to be known in all parts of the world, and is everywhere recognizable among other owls by the heart-shaped form of the facial discs, which meet in a point below the beak. These give a very quaint expression, which has led to the soubriquet "monkey-faced" in the Southern States. It is about 17 inches in length, and its plumage is yellowish-red, irregularly marked with lighter and darker tints. The eyes are small and black and surrounded by cream-colored discs, bordered with rust-red. The legs are long and bear short feathers only. It is more numerous in the southern part of the United States than in the northern portion, and is rarely seen even where many exist, since it is more completely nocturnal in its habits than are most owls. It makes its nest in hollow trees or a niche in some rocky cliff or earthen bank, and occasionally nests in belfries or old walls, as is a common habit in Europe. The nest is composed of straw and feathers and the eggs are white. H. K. Fisher, author of 'The Hawks and Owls of the United States' (1893), regards this owl as probably the most beneficial of its tribe to the agriculturist, because in America, at least, it subsists almost entirely upon the small rodents so injurious to crops. This is especially true in the South, where it subsists on the cotton rat and the many harmful mice; while in the West, it catches gophers, ground-squirrels and rabbits, so that it is entitled to gratitude and protection. The same beneficent service is reported for it in other parts of the world. The American is regarded by many ornithologists as a separate species, *Strix pratincola*.

**BARN SWALLOW,** one of the most familiar and widespread of North American swallows (*Chelidon erythrogaster*). Its plumage is lustrous blue; the forehead, chin and throat dull chestnut, bounded by a collar-like band of blue across the chest, below which the plumage is pale reddish-brown. By its deeply forked tail it is readily distinguished from the square-tailed cliff-swallow, which also throngs about barns and often is wrongly termed barn swallow; but the latter invariably puts its flask-shaped nests under the eaves outside of the structure, while the true barn swallow invariably nests inside the building. These birds have remarkable wing power, flying for many miles at a time at the rate of more than a mile a minute, with consummate grace and ease, and catching in the air all their food, which consists of winged insects, many of which are injurious or annoying to man, so that their presence is of decided benefit, as well as a pleasant accompaniment of rural life. Before the country was densely populated the swallows made their homes in caves, or in niches of rocks, or hollow trees, but ever since the civilization of the country began, these trustful birds have built their nests close to man's habitations, everywhere frequenting barns and outhouses. Their nest is composed of layers of mud, about an inch thick, plentifully mixed with straw, and lined with feathers. They usually rear two broods a season — the first in May, and the second in July. The eggs are four to six in number, white, with red and purple spots and splashes nearly covering the larger end. When the second brood of young are capable of using their wings, the swallows congregate in flocks of thousands, and migrate southward, traveling by daylight, instead of at night, as is the custom of most migratory birds. In the northeastern part of the country, the barn swallows have been nearly exterminated by the English sparrow, who seize their nest for their own breeding purposes and destroy their eggs and young in a ruthless way, often, apparently, in a spirit of malicious mischief.

**BARNABAS,** the surname given by the apostles to Joses, or Joseph, a fellow-laborer of Paul, and, like him, ranked as an apostle. He was a Levite and a native of Cyprus; contributed to the community of goods among the disciples (Acts iv, 36–37); was sponsor for Saul, the former persecutor. That he was a man of influence in the early church of Jerusalem is attested by his being commissioned to investigate the church of Antioch. He journeyed thence to Tarsus, where he joined Saul, with whom he was again sent out upon missionary work (Acts xiii, 2). With Paul, he journeyed through Asia Minor, and wound up his missionary tour at Antioch, where both he and Paul became involved in the contentions of the Judaizing Christians regarding circumcision. They submitted the matter to the apostles and returned to Antioch, where they labored for some time before revisiting the communities established during their first tour of Asia Minor. A difference arose between them in regard to Mark, a nephew of Barnabas, and they separated, Barnabas and Mark going to Cyprus, the native place of the former. From this time the history of Barnabas is obscure. There is mention of him (1 Cor. ix, 6) as being still actively engaged in missionary work, but it would appear that he never rejoined Paul. There are unsupported traditions that he preached in Rome; that he was founder and first bishop of the church of Milan, and that he suffered martyrdom at Salamis in his native Cyprus. There is an epistle of 21 chapters ascribed to Barnabas by Tertullian and other early Christian writers, but without any support of internal evidence. It was probably written in the 2d century by a Gentile who had come under the influence of Alexandrian Judaistic thought. An apocryphal Acts, an apocryphal Gospel also bear his name. Tertullian also ascribes to him the epistle to the Hebrews in the New Testament. Consult "Barnabas" in Hastings' 'Dictionary of the Bible' (New York 1898); id. in Cheyne, 'Encyclopædia Biblica' (ib. 1899); Harnack, A., 'Chronologie der altcristlichen Litteratur' (Leipzig 1897); Krüger, G., 'History of Early Christian Literature' (New York 1897); Lightfoot, J. B., 'Apostolic Fathers' (London 1893).

**BARNABAS, Acts, Epistle, and Gospel of.** (1) The 'Acts of Barnabas' are clearly apocryphal and of late date. They recount his missionary journeys and his martyrdom in Cyprus. (2) The 'Epistle of Barnabas' is one of the apocryphal books of the New Testament. At the end of the Codex Sinaiticus of the 4th century, there is an epistle of Barnabas. It

is strongly anti-Jewish in tone, is full of allegorical interpretations of the Old Testament. It once enjoyed quasi-canonical authority, as is borne out by Eusebius and by the comments of Clement, Origen and other early Christian writers, who also are unanimous in ascribing it to Barnabas, the coworker of Paul. Internal evidence, however, renders this claim impossible. Its authority was greatest at Alexandria, and it is clearly of Alexandrine origin and was directed, as its opening shows, to some body of Christians in lower Egypt. Its date has been much debated as being from 70 to 130 A.D., but Lightfoot's interpretation of the apocalyptic passage in chapter iv is really conclusive for the reign of Vespasian (70–79 A.D.). This epistle is, therefore, the earliest of the Apostolic Fathers and, as such, is of special interest. Its central problem — the relation of Judaism and Christianity — of the old and new forms of a divine covenant — was one which gave the early Church much trouble, and was one which the Church failed to solve satisfactorily. (3) The existence of a 'Gospel of Barnabas' is inferred from references to it in several ancient writings, notably in the 'Decretum Gelasii' (496 A.D.), but we have no knowledge of its contents. There exists, however, in a single Italian manuscript, a long gospel with this title, written from a Mohammedan standpoint, but embodying Gnostic elements. It has been edited, with an English translation by Lonsdale and Ragg (1907), who hold that it was the work of a Christian renegade to Mohammedanism about the 13th–16th century. The work is highly imaginative and at times grotesque, but is pervaded with a high ethical enthusiasm. Consult Braunsberger, O., 'Der Apostel Barnabas, sein Leben und der ihm beigelegte Brief' (Mainz 1876); Cunningham, 'Epistle of Barnabas' (1877); Donaldson, J., 'The Apostolic Fathers'; Lightfoot, J. B., 'Apostolic Fathers' (London 1893); Krüger, G., 'Early Christian Literature' (New York 1897); Reuss, E., 'Théologie chrétienne'; and articles "Barnabas" in Cheyne, 'Encyclopedia Biblica' (New York 1899); and Hastings, 'Dictionary of the Bible' (ib. 1898).

**BARNABAS, Cape,** a headland of Alaska, which the navigator, Captain Cook, discovered on Saint Barnabas Day.

**BARNABITES,** a congregation of regular clerics in the Roman Catholic Church, founded in 1532 by three priests — Zaccharia of Cremona, Ferrari and Morigia of Milan. They were at first called the Regular Clerks of Saint Paul from their first church, Saint Paul's in Milan, which name they exchanged for Barnabites when, in 1545, they were presented with the church of Saint Barnabas in Milan. A new rule was drawn up and approved in 1579. In addition to the three monastic vows, they took a fourth, never to exert themselves for an office within the congregation or without, and never to accept a dignity out of the congregation except by special permission of the Pope. Their houses are called colleges. The superior is chosen every third year by a General Chapter. The lay brothers have to pass through a novitiate of five years. The extension has been limited to Italy, Austria, France and Spain. The French Revolution and its sequelæ drove them from France and Spain. They returned to France in 1857, but were again driven out in 1880. Cardinal Lambruschini was the most celebrated member of the order in recent times. The order has about 25 houses altogether. Many Russians of noble ancestry, who had joined the Church of Rome, have joined the order within the last 20 years.

**BARNABY, Sir Nathaniel,** English naval architect: b. Chatham 1829; d. London, 15 June 1915. He began his career as an apprentice shipwright in Sheerness dockyard at the age of 14, afterward entering the designing office of the admiralty. In 1872 he became chief naval architect, and from 1875–85 was chief naval constructor to the admiralty. He brought about the substitution of steel for iron in shipbuilding, and the subsidizing of merchant vessels for use in war. He was created a K.C.B. in 1885.

**BARNABY RUDGE,** a novel by Charles Dickens, published in 1841. It contains an account of the Gordon riots in London, 2–7 June 1780. The plot is extremely intricate. Some of the most whimsical and amusing of Dickens' character-studies appear in the pages of this novel, while the whole episode of the gathering and march of the mob and the storming of Newgate is surpassed in dramatic intensity by no passage in modern fiction, unless by Dickens' own treatment of the French Revolution in the 'Tale of Two Cities.'

**BARNACLE, Lord Decimus Tite,** the name of the nobleman whom Dickens in his 'Little Dorrit' places in charge of the circumlocution office.

**BARNACLE,** a degenerate crustacean of the order *Cirripedia,* living attached to some foreign object, such as wharf piles, rocks and the bottoms of ships. The barnacles would at first glance hardly be regarded as Crustacea at all, and were considered to be mollusca, until in 1836 Thompson found that the young barnacle was like the larvæ of other low Crustacea (*Copepoda*). The young barnacle is, as in the common sessile form, a shell-like animal; the shell composed of several pieces or valves with a multivalve, conical, movable lid, having an opening through which several pairs of long, many-jointed, hairy appendages are thrust, thus creating a current which sets in toward the mouth. The common barnacle (*Balanus balanoides*) abounds on every rocky shore from extreme high-water mark to deep water, and the student can, by putting a group of them in sea water, observe the opening and shutting of the valves and the movements of the appendages. The structure of the barnacle may best be observed in dissecting a goose-barnacle (*Lepas fascicularis*). This barnacle consists of a body (capitulum) and leathery peduncle. There are six pairs of jointed feet, representing the feet of the cyclops. The mouth, with the upper lip, mandibles, and two pairs of maxillæ, will be found in the middle of the shell. A short œsophagus leads to a pouch-like stomach and tubular intestine. This form, like most barnacles, is hermaphroditic, the ovary lying at the bottom of the shell, or, in the pedunculated forms, in the base of the peduncle, while the male gland is either close to or some distance from the ovary. There is also at the base of the shell, or in the peduncle

when developed, a cement-gland, the secretion of which is for the purpose of attaching the barnacle, when in the "cypris" stage, to some rock or weed.

While the sexes are generally united in the same individual, in the genera *Ibla* and *Scalpellum*, besides the normal hermaphroditic form, there are females, and also males called "complementary males," which are attached parasitically both to the females and the hermaphroditic forms, living just within the valves or fastened to the membranes of the body. These complemental males are degraded, imperfect forms, with sometimes no mouth or digestive canal. The apparent design in nature of their different sexual forms is to effect cross-fertilization. The eggs pass from the ovaries into the body-cavity, where they are fertilized and remain for some time. They pass through a morula condition, a suppressed gastrula or two-layered state, and hatch in a form called a "Nauplius," from the fact that the free-swimming larva of the Entomostraca was at first thought to be an adult Crustacean, and described under the name of Nauplius. The Nauplius of the genuine barnacles has three pairs of legs ending in long bristles, with a single eye and a pair of antennæ, the body ending in front in two horns, and posteriorly in a long caudal spine. After swimming about for a while, the Nauplius attaches itself to some object by its antennæ, and a strange transformation results. The body is enclosed by two sets of valves, appearing as if bivalved, like a cypris; the peduncle grows out, concealing the rudimentary antennæ, and the feet become smaller, and eventually the barnacle shape is attained. The common barnacle (*Balanus balanoides*) attains its full size, after becoming fixed, in one season; that is, between April and November. Consult monographs on the Crustacea by Charles Darwin (London 1851–54); 'Challenger Reports' (Vol. XXVIII); Hoek, 'Report on the Cirripedia Collected by H. M. S. Challenger' (London 1884); Pilsbury, 'On the Classification of Scalpelliform Barnacles' *in* Proceedings of the Philadelphia Academy of Natural Sciences (Philadelphia 1908); 'Barnacles of Japan and Bering Sea' (London 1911); Robinson, 'Fishes of Fancy' (London 1883); Mayer, 'Sea-Shore Life' (New York 1906); Calman, 'Life of Crustacea' (New York 1911).

**BARNACLE-EATER.** See FILE FISH.

**BARNACLE GOOSE.** See BERNACLE GOOSE.

**BARNARD, Lady Anne,** Scottish poet, author of 'Auld Robin Gray': b. 1750; d. 26 May 1825. She was the eldest daughter of James Lindsay, 5th Earl of Balcarres, and in 1793 married Andrew Barnard, a son of the bishop of Limerick, and colonial secretary to Lord Macartney at the Cape of Good Hope. There Lady Anne lived till 1807, when, losing her husband, she returned to London, her residence till her death. Her famous lyric was written as early as 1772 to be sung to an ancient melody; but she first acknowledged its authorship in 1823 to Sir Walter Scott, who two years later edited it for the Bannatyne Club, with two continuations. Her 'Letters' were published in 1901.

**BARNARD, Charles,** American miscellaneous writer: b. Boston, Mass., 13 Feb. 1838; author of books on horticulture, music, electricity and other technical subjects, and since 1869 a contributor to the press on a very great variety of subjects. Was contributing editor to the *Century Dictionary* regarding "Tools and Machines." Author of 'The County Fair' and other plays. Lecturer for board of education, New York, and writer and lecturer on housekeeping efficiency and founder of first housekeeping experiment station. More recently, lecturer on social and educational subjects in Pasadena, Cal.

**BARNARD, Mrs. Charlotte Alington,** "CLARIBEL," English composer of songs and ballads; b. 1830; d. Dover 1869. She married in 1854 Charles Barnard, and four years later began to compose. She wrote nearly 100 ballads between 1858 and 1868 under the pseudonym of Claribel, many of them becoming very popular, "Won't You Tell Me Why, Robin?" and "Come Back to Erin," being especially well known. In most cases she wrote the words for her songs, and she was also the author of a volume of 'Thoughts, Verses and Songs.'

**BARNARD, Edward Emerson,** American astronomer: b. Nashville, Tenn., 16 Dec. 1857. He learned photography in a studio as a boy, and began astronomical studies alone. He studied at the Vanderbilt University and University of the Pacific, and received degrees from many sources, including those of hon. Sc.D. from Vanderbilt, LL.D., Queens (Canada). He was in charge of the Vanderbilt University Observatory, 1883–87. He was astronomer in Lick Observatory, California, 1887–95, and then became professor in Chicago University. His principal discoveries are the fifth satellite of Jupiter in 1892 and 16 comets. He has made photographs of the Milky Way, the comets, nebulæ, etc. He is professor of practical astronomy, Chicago University, and astronomer at Yerkes Observatory, Williams Bay, Wis., since 1895. He accompanied the United States naval total eclipse expedition to Sumatra (1901); received the Lalande gold medal of the Paris Academy in 1892, the Arago gold medal in 1893, the Janssen gold medal (1900), the gold medal of the Royal Astronomical Society of Great Britain (1907), and the Janssen prize from the Société Astronomique de France (1906). He is F.A.A. (vice-president, 1898) Astronomical and Astrophysics Society of America; associate fellow, American Academy of Arts and Sciences; fellow of the American Philosophical Society; honor member, Royal Astronomical Society (Canada); former associate and fellow, Royal Astronomical Society; member, Société Astronomique de France; and member of the National Academy of Sciences. He published 'Micrometrical Observations of Eros made during Opposition of 1900–01' (1902).

**BARNARD, Frederick Augustus Porter,** American educator: b. Sheffield, Mass., 5 May 1809; d. 27 April 1889. He was graduated at Yale College in 1828; instructor there in 1830; professor of mathematics and natural philosophy in the University of Alabama, 1837–48, and afterward of chemistry and natural history till 1854; professor of mathematics and astronomy

in the University of Mississippi, 1854–61; its president in 1856–58, and its chancellor in 1858–61. He was president of Columbia College, New York, in 1864–88. In 1860, he was appointed a member of the expedition to observe the eclipse of the sun in Labrador; was engaged in 1862 in reducing observations of the stars in the southern hemisphere; had charge of the publication of charts and maps of the United States Coast Survey in 1863; was named one of the original incorporators of the National Academy of Sciences in 1863; was one of the United States commissioners to the Paris Exposition in 1867; member of the American Philosophical Society, corresponding member of the Royal Society of Liége, and member of many other scientific and literary associations. Among his publications are 'Letters on College Government' (1854); 'Report on Collegiate Education' (1854); 'Art Culture' (1854); 'History of the American Coast Survey' (1857); 'University Education' (1858); 'Undulatory Theory of Light' (1862); 'Machinery and Processes of the Industrial Arts, and Apparatus of Exact Science' (1868); 'Metric System of Weights and Measures' (1871); 'Recent Progress of Science,' etc. Barnard College, affiliated with Columbia University, was named in his honor.

**BARNARD, George Grey,** American sculptor: b. Bellefonte, Pa., 24 May 1863. He studied at the Chicago Art Institute and the École Nationale des Beaux Arts, Paris, 1884–87. He first exhibited at the salon of 1894. In 1900 he received a gold medal at the Paris Exposition. Was for many years professor of sculpture in the Art Students' League, New York city. His chief works, largely symbolical in character, are 'Brotherly Love,' 'The Two Natures' (in the Metropolitan Museum), 'The God Pan' (Central Park), and 'The Hewer.' His studio is in Paris.

**BARNARD, Henry,** American educator: b. Hartford, Conn., 24 Jan. 1811; d. 5 July 1900. He was president of the University of Wisconsin (1856–59), and Saint John's College, Annapolis, Md. (1865–66); founded the 'American Journal of Education' (1855); was the first United States commissioner of education (1867–70). Among his numerous writings are 'Hints and Methods for Teachers' (1857); 'Pestalozzi and Pestalozzianism' (1861); 'German Educational Reformers' (1862); etc. In 1886 he began to publish the 'American Library of Schools and Education,' a collection of 800 of his own writings, reports, etc.

**BARNARD, John Gross,** American military engineer: b. Sheffield, Mass., 19 May 1815; d. 14 May 1882; brother of F. A. P. Barnard (q.v.). He was graduated at the United States Military Academy in 1833; served from 1835 to 1852 on the coast of the Gulf of Mexico; and was brevetted major in the Mexican War. In the Mexican War he fortified Tampico and became chief of the Tehuantepec Survey. In 1855–56 he was superintendent of the West Point Military Academy. In the Civil War he was successively chief engineer of the department of Washington, chief engineer of the army of the Potomac, and chief engineer of the staff of General Grant. He subsequently had charge of the fortifications of San Francisco and New York harbors. His published works include 'Phenomena of the Gyroscope' (1858); 'Dangers and Defenses of New York' (1859); 'Notes on Sea-Coast Defense' (1861); 'The Confederate States Army and the Battle of Bull Run' (1862). Consult 'Biographical Memoirs of the National Academy of Sciences' (1905).

**BARNARD CASTLE,** England, market town of Durham County, on the Tees, 17 miles west of Darlington, on a branch of the North Eastern Railway. It is beautifully situated on the steep left bank of the river, contains a fine town-hall, dating from 1747, also a museum and a number of industrial establishments. It has a large grain market. It contains a number of interesting ruins, the chief of which is the castle built in the 13th century by Guy Baliol Bernard, an ancestor of John Baliol, King of Scotland. The castle is the principal scene of Walter Scott's 'Rokeby.' Pop. 4,757.

**BARNARD COLLEGE,** the undergraduate college for women of Columbia University. In 1889 a group of men and women who wished to provide for women in New York city a college education fully equal to that offered to men succeeded in obtaining the sanction of the trustees of Columbia for the establishment of an affiliated women's college. A charter was granted by the State of New York, and promises of subscriptions for the support of the college during the first four years of its existence were secured. Because President Frederick A. P. Barnard of Columbia College had for many years been an ardent advocate of the admission of women to Columbia, the founders of the new college gave it his name. With seven instructors selected from the teaching staff of Columbia and with 26 students, Barnard opened in the fall of 1889. In 1900, when the original informal arrangement for instruction had been outgrown, an agreement was made between the trustees of Columbia College and of Barnard College by which Barnard was incorporated in the educational system of the university. By the provisions of this agreement, the president of Columbia is ex officio president of Barnard. Barnard professors are appointed by the university on the nomination of the dean of Barnard with the approval of the president and trustees; in exchange for instruction given by them at Columbia, Columbia instructors give courses at Barnard. The graduates of Barnard receive their degrees from Columbia. The University library is open to women on the same terms as to men. Various opportunities in the professional and post-graduate schools of the university have also been opened to Barnard students. On the other hand, Barnard has its separate corporate and financial organization; it retains its own internal administration, conducted by the dean and the provost, who are appointed by the president with the approval of the trustees of Barnard. Two liberal courses of undergraduate instruction are offered, each of four years' duration — a literary course leading to the degree of bachelor of arts and a scientific course leading to the degree of bachelor of science. A general two-year course not leading to a Barnard degree is arranged to give the cultural basis for work in certain professional schools of the university. The college is situated on Broadway between

116th and 120th streets, west of Columbia. Milbank quadrangle, the section extending from 116th to 119th street, was given in 1903 by Mrs. A. A. Anderson. The buildings include Milbank, Fiske and Brinckerhoff halls, the gifts of Mrs. Anderson, Mrs. Josiah T. Fiske and Mrs. Van Wyck Brinckerhoff, respectively, which contain the administrative offices, lecture-rooms and laboratories; Brooks Hall, the hall of residence; and a new Students Hall, given by Jacob H. Schiff, which contains the gymnasium, swimming-pool, reading-room, lunch-room, etc. On the Quadrangle are tennis courts and a practice field for basketball and athletics. Barnard owned in 1916 equipment, buildings and grounds of an estimated value of over $2,000,000 and held productive funds providing a net income of $60,000. Barnard has about 700 students, a staff of over 80 professors and other officers of instruction, and shares in the services of 23 others who come from Columbia to give courses.

**BARNARDO, Thomas John,** English philanthropist: b. Ireland 1845; d. London, England, 19 Sept. 1905. He founded the Barnardo Homes for homeless children, his attention being turned in this direction while studying medicine, by the condition of a boy in a ragged school in East London in 1866. Following up the subject, he began to rescue children who found their only shelter at night under archways, or in courts and alleys. These were introduced to his homes, where they received an industrial training, were saved from a possible career of crime, and enabled to achieve an honorable position in life. At the time of his death Dr. Barnardo had under his direction in the United Kingdom and the colonies 112 mission branches and distinct homes dealing with every age and class of needy and destitute childhood, including an immigration depot in Ontario, an industrial farm in Manitoba, a home for babies and a hospital for sick children, while over 60,000 trained and tested boys and girls had passed through his institutions.

**BARNATO, BARNEY,** or **BARNETT,** South African speculator, whose real name is believed to have been Bernard Isaac: b. London, England, about 1845, of Hebrew parents; d. 14 June 1897. He began business as a dealer in diamonds, and in five years earned enough to buy shares in the Kimberley diamond mines. He established a partnership with Cecil Rhodes, and when, in 1886, gold was discovered, secured possession of a great part of the region. He committed suicide by jumping from the deck of the steamer *Scot,* bound from Cape Town to Southampton. Consult Isaac's 'Life of Barnett Barnato' (1897).

**BARNAUL,** bär-noul', Siberia, a mining town in the government of Tomsk, and 230 miles southwest of the town of that name, and 2,046 miles east-southeast of Moscow, on the Barnaulski, near its junction with the Obi. It is well built, and the streets are regular and spacious. The chief edifices are of wood. There is a mining-school, an observatory, a public library, a museum, a mint, etc. Lead is smelted from the mines in the neighborhood; there are lime and brick kilns, a mint for copper coins and manufactories. It is the chief town and the administrative seat of the personal domains of the Tsar in the Altai, and contains the imperial smelting works, the annual output of which exceeds 13,000 pounds of gold and 5,000 pounds of silver (troy). Pop. about 30,000.

**BARNAVE,** bär-nav, **Antoine Pierre Joseph Marie,** French orator: b. Grenoble, 1761; d. Paris, 29 Nov. 1793. He was chosen a deputy of the *tiers état* to the assembly of the States-General, and showed himself an open enemy to the court. The Constituent Assembly appointed him their president in January 1791. After the flight of the King he defended Lafayette against the charge of being privy to this step, and, upon the arrest of the royal family, was sent, with Petion and Latour-Maubourg, to meet them, and to conduct them to Paris. When the correspondence of the court fell into the hands of the victorious party, 10 Aug. 1792, they pretended to have found documents which showed him to have been secretly connected with it, and he was guillotined. See Salvandy, 'Life of Barnave'; Lamartine, 'History of the Girondists.'

**BARNAY, Ludwig,** German actor: b. Pesth 1842. He made his first stage appearance at Trautenau in 1860, and thereafter appeared at Pesth, Gratz, Mainz, Vienna, Prague, Riga, Leipzig and Weimar. From 1870 to 1875 he was at the Stadt-Theater of Frankfort-on-the-Main, and from 1875 to 1880 at the Stadt-Theater of Hamburg. He visited London in 1881 as leading actor of the Meiningen Court Company, and came to the United States in 1882 where he had a very successful tour. He managed the Berliner Theater in Berlin 1887–94, and then took up his residence at Wiesbaden. He excels as a tragedian. His principal rôles are Essex, Uriel Acosta, Othello, Antony, Tell and Egmont. He helped organize the stage congress at Weimar in 1871, which led to the formation of the Bühnengenossenschaft, which has been of great service to members of the German theatrical profession.

**BARNBURNERS,** a nickname for the progressive section of the New York State Democracy from about 1844 to 1852, which retaliated by calling the other party "Hunkers." They were essentially the same party which from 1835 onward had favored extension of the canal system, while their opponents were the same who wished it restricted to immediately profitable canals; but under these names the division was on the slavery question (see FREE-SOIL PARTY), in which the Barnburners were the Van Buren or Free-Soil wing. They also stood for the local control by the "Albany Regency," as against the Polk "machine" which the new administration was trying to build up in New York, and which favored the extension of slavery into the Territories. About 1852 the nicknames changed into "Softs" and "Hards," corresponding with new issues to the later "Half-breeds" and "Stalwarts." The origin of the name is usually derived from the familiar campaign story of the man who burned his barn to free it from rats.

**BARNBY, SIR Joseph,** English composer and organist: b. York, 12 Aug. 1838; d. London, 28 Jan. 1896. He was chorister in York Minster; organist Saint Andrew's, Wells street, London, 1863–71; precentor and choirmaster Saint Ann's, Soho, 1871; precentor and director

of musical instruction in Eton College, 1875, and head of the Guildhall School of Music in London from 1892. His cantatas of "Rebekah," a sacred idyll, and "The Lord Is King"; numerous highly interesting services and anthems (such as "King All Glorious"), for the Church, as well as several secular choruses and songs, rendered him famous both in England and the United States. He was knighted in 1892.

**BARNEGAT BAY,** a bay on the east coast of New Jersey, about 25 miles in length, and separated from the ocean by Squan and Island beaches. Barnegat Inlet connects it with the Atlantic. On the south side of the inlet is a lighthouse 150 feet high.

**BARNES, Albert,** American theologian: b. Rome, 1 Dec. 1798; d. Philadelphia, 24 Dec. 1870. Until the age of 17 he was employed by his father, who was a tanner, in his own occupation. At the age of 22 he graduated at Hamilton College, and after studying theology at Princeton was licensed to preach in 1824, and ordained pastor to the Presbyterian Church of Morristown, N. J., in February 1825. In 1830 he was removed to the pastoral charge of the First Presbyterian Church in Philadelphia, where he remained till his death. He is chiefly known by his 'Notes on the New Testament,' published in 11 volumes between 1832 and 1848; and his 'Notes on the Old Testament,' completed in 1870, which are favorite works with Sunday-school teachers and others engaged in biblical tuition. Other works of his are 'The Church and Slavery' (1857); 'The Atonement in Its Relations to Law and Moral Government' (1859); 'Evidences of Christianity' (1868); 'Life at Threescore and Ten' (1869). He was tried for heresy on account of his belief in unlimited atonement, and though acquitted, the eventual result of the trial was to divide the Presbyterian body in the United States into the Old and New School branches in 1837.

**BARNES, Charles Reid,** American botanist: b. Madison, Ind., 7 Sept. 1858; d. 1910. He was educated at Hanover (Ind.) College, 1877, and pursued graduate studies at Harvard. He held professorships in Purdue University and the University of Wisconsin, 1880–98, and in the latter year became professor of plant physiology in the University of Chicago. He is the author of 'Outlines of Plant Life' (1900); joint author of 'Plant Dissection' (1886); and 'Keys to the Genera and Species of North American Mosses' (1890–97); 'Text Book of Botany,' in collaboration with J. Coulter and H. C. Cowles (1910). He contributed many papers to the *Botanical Gazette,* of which he was an editor after 1883. He was appointed vice-president of the American Association for the Advancement of Science in 1899 and president of the Botanical Society of America in 1903.

**BARNES, Dame Juliana.** See BERNERS, DAME JULIANA.

**BARNES, Earl,** American educator and lecturer: b. Martville, N. Y., 15 July 1861. He was graduated at the Oswego Normal School in 1884, received the degree of A.B. from Indiana University in 1889, and that of M.S. from Cornell in 1891. He was professor of European history at Indiana University, 1890–92, and from then until 1897 professor of education at Stanford University. He has since devoted himself to lecturing and writing. He has published 'Studies in Education' (Vol. I, 1889; Vol. II, 1902); 'Where Knowledge Fails' (1911); 'Woman in Modern Society' (1913).

**BARNES, Howard Turner,** American educator: b. Woburn, Mass., 21 July 1873. He went to Canada with his parents in 1879, and was graduated at McGill University in 1893. While doing post-graduate work he alternated his studies with work as demonstrator in the physics department of the university. In 1898 he was awarded the Joulé studentship by the Royal Society. After further research work in heat he submitted the results to the Royal Society at a special session of that body; these were made the basis of a report to a conference of physicists at the Paris Exposition of 1900. In that year he was appointed lecturer in physics at McGill University; became assistant professor there in 1902, associate professor in 1906 and Macdonald professor of physics in 1908. He has given particular attention to the formation of ice in flowing water, and particularly the form of ice known as "frazil" and anchor ice. Having read a paper on the 'Ice Problem in Engineering Work in Canada' before the British Association for the Advancement of Science in 1907, he subsequently published a work on 'Ice Formation and Frazil,' which is the first authoritative volume on the subject. He has also made improvements in the construction of thermometers, and has perfected a pyrometer, which is coming into use in the regulation of furnaces and manufactories.

**BARNES, James,** American soldier: b. Boston, Mass., 1806; d. Springfield, Mass., 12 Feb. 1869. Appointed to West Point from Massachusetts, he was graduated there in 1829, standing fifth in a class which included R. E. Lee, J. E. Johnston and a number of others who afterward became distinguished. In 1829–30 he was assistant instructor in French at the Military Academy. Resigning from the army after seven years' service, he became a railroad engineer and built, either wholly or in part, the Rome & W., Sacketts' H. & E., the Buffalo, C. & N. Y., the Terre Haute, A. & St. L., and the Potsdam & W. railroads between 1848 and 1857. During the Civil War he was colonel of the 18th Massachusetts Volunteers 1861–62, and brigadier-general of United States Volunteers 1862–65. He was present at the battles of Antietam, Fredericksburg, Chancellorsville and Gettysburg, where he was severely wounded. Exposure and wounds so impaired his constitution that he was unable to engage actively in his profession after the war. In 1865 he was brevetted major-general of volunteers for meritorious services.

**BARNES, James,** American writer for boys: b. Annapolis, 19 Sept. 1866. He was educated in Saint Paul's School, Concord, N. H., and after two years spent as civil engineer in construction work with the Missouri Pacific Railway, he entered Princeton University, and was graduated thence in 1891. While there he was editor of the *Nassau Literary Magazine.* After his graduation he was asso-

ciated with *Scribner's Magazine*; was assistant editor *Harper's Weekly* (1894–95); special correspondent of the *Outlook* during the Boer War, and in 1903 at the Venezuela blockade; and editor of *Appleton's Magazine*. He is author of 'For King or Country' (1895); 'Naval Actions of 1812' (1896); 'A Princetonian' (1896); 'Midshipman Farragut' (1896); 'A Loyal Traitor' (1897); 'Commodore Bainbridge' (1897); 'Yankee Ships and Yankee Sailors' (1898); 'David G. Farragut' (1899); 'Drake and His Yeoman' (1899); 'The Great War Trek' (1901); 'With the Flag in the Channel' (1902); 'The Giant of Three Wars' (1903); 'The Unpardonable War' (1904); 'The Son of Light Horse Harry' (1904); 'The Blockade' (1905); 'Outside the Law' (1906); 'The Clutch of Circumstance' (1908); 'Commodore Perry' (1912); 'Rifle and Caravan' (1912); 'Through Central Africa from Coast to Coast' (1915). In 1913–14 Mr. Barnes crossed the continent of Africa at the head of an expedition.

**BARNES, Joseph K.,** American surgeon: b. Philadelphia, 21 July 1817; d. Washington, D. C., 5 April 1883. He was educated at Harvard and in the medical department of the University of Pennsylvania; became assistant surgeon in the army in 1840, and served at various posts through the Mexican War. At the beginning of the Civil War he was summoned from Oregon and assigned to duty in the office of the surgeon-general. In 1863 he was appointed a medical inspector, with the rank of colonel, and in September of the same year was promoted to brigadier-general. In 1865 he was brevetted major-general, United States army. To him was due in great measure the efficiency of the medical department during the war. He was surgeon-general of the army from 1864 till 1882, when he was retired. He attended Presidents Lincoln and Garfield on their deathbeds. He founded the Army Medical Museum and the library of the surgeon-general's office.

**BARNES, Joshua,** English classical scholar: b. London, 10 Jan. 1654; d. 3 Aug. 1712. He became Regius professor of Greek at Cambridge in 1695. He published 'Gerania; or, A New Discovery of a Little Sort of People Called Pygmies' (1675), from which Swift is said to have drawn material for his 'Voyage to Lilliput'; 'Ἀνλικοκάτοπτρον' (1679), a paraphrase of the biblical story of Esther; 'History of that Most Victorious Monarch, Edward III' (1688); editions of Euripides (1694); of Anacreon (1705); of Homer (1711). These editions are no longer used.

**BARNES, William,** English dialect poet and philologist: b. Rushay, Dorsetshire, 20 March 1801; d. 7 Oct. 1886. Of humble birth, he first entered a solicitor's office, then taught a school in Dorchester. He took orders, and became, in 1862, rector of Winterbourne Came in his native county, and died there. He acquired a knowledge of many languages, and published 'An Anglo-Saxon Delectus'; 'A Philological Grammar, grounded upon English' (1854); 'Grammar and Glossary of the Dorset Dialect' (1863), etc., but is best known by his 'Poems of Rural Life in the Dorset Dialect' (1844), and 'Poems of Rural Life, in Common English' (1868). As a philologist, he was distinguished by an intense dislike of Latinized forms. His dialect poems reveal a high order of genius, placing him in the first flight of English pastoral poets, and have earned for him the title of "The Dorsetshire Burns." A collected edition of these appeared in 1879, and his 'Life,' edited by his daughter, Lucy Baxter, was published in London in 1887.

**BARNES, William, Jr.,** American politician and publisher: b. Albany, N. Y., 17 Nov. 1866. He was graduated at Harvard University in 1888, and in 1889 became owner and editor of the Albany *Journal*. He took an active interest in Republican politics and soon became prominent in that party in New York State. He became a member of the Republican State Committee in 1892, and was its chairman in 1911–14. He has never held an elective office but virtually directed his party in New York until 1912, when it split into the progressive and conservative sections. Barnes led the conservative element at the Chicago convention (1912) in opposing the candidacy of Theodore Roosevelt for the presidency.

**BARNESBORO,** Pa., borough of Cambria County, 40 miles northwest of Altoona, on the Pennsylvania Railroad. It has extensive coal-mining interests and contains lumber yards, an ice-cream factory, bottling works, a theatre and numerous churches and hotels. The waterworks are borough property. Pop. 3,535.

**BARNESVILLE,** Ga., town of Pike County, 60 miles southeast of Atlanta, on the Central of Georgia Railroad. It has manufactories of wagons and buggies and has a large trade in cotton. There is a Carnegie library located here. It is also the seat of Gordon Institute. Pop. 3,068.

**BARNESVILLE,** Minn., city in Clay County, in the Red River valley, 24 miles from Moorhead, the county-seat, on the Great Northern Railroad. It has a flour mill, creamery, cigar factory, post office and two banks with aggregate resources of $865,000. The value of the taxable property amounts to $331,357. The city has a fine school building which cost $65,000. The city owns the electric-light plant, the waterworks and the telephone system. Pop. 1,550.

**BARNESVILLE,** Ohio, town in Belmont County, on the B. & O. Railroad, 32 miles west of Wheeling. It is the centre of an extensive tobacco and fruit region and manufactures glass, carwheels, cigars, bottles, shirts and overalls. It was settled in 1800, and was incorporated in 1836. The government is vested in a mayor, elected biennially, and a council. The waterworks are owned and operated by the city. It has a national bank, schools, churches and several newspapers. Pop. 4,233.

**BARNET, or HIGH BARNET,** England, town in Hertfordshire, 11 miles from London. Near the town is the site, marked by an obelisk, of the famous battle, fought 14 April 1471, between the Yorkists and Lancastrians, in which the latter were routed, and their leader, Warwick, "the king-maker," slain. Pop. 10,440.

**BARNETT, John,** English composer: b. Bedford 1802; d. 16 April 1890. He was the

son of a Prussian named Bernhard Beer, who changed his name on settling in England as a jeweler. Barnett sang on the stage of the London Lyceum at the age of 11. His good voice led to his being given a musical education under various masters, and he soon began writing songs and lighter pieces for the stage. In 1834 he published a collection of 'Lyrical Illustrations of the Modern Poets.' His 'Mountain Sylph' was accorded a warm welcome when produced at the London Lyceum in 1834 as the first modern English opera. It was followed by another, 'Fair Rosamond' in 1837, which was not so successful, and by 'Farinelli' in 1839. He was long popular as a singing master at Cheltenham, and published 'Systems and Singing-masters' (1842), and 'School for the Voice' (1844).

**BARNETT, John Francis,** English musician and composer: b. London, 16 Oct. 1837. He is a nephew of John Barnett. He studied at the Royal Academy of Music and at the Leipzig Conservatory. He performed the concerto in D minor of Mendelssohn at the New Philharmonic Concert of 1852, played at a Gewandhaus Concert at Leipzig in 1861 and at the London Philharmonic Society 1863. He came into notice as a composer with his symphony in A minor (1864) and followed this with a number of compositions for orchestra, strings or pianoforte. His cantata, 'The Ancient Mariner' was produced at Birmingham in 1867, and 'Paradise and the Peri' in 1870. His most important work is the oratorio, 'The Raising of Lazarus' produced at Hereford in 1876. Many other cantatas, pianoforte pieces, etc., were composed by him. He is professor at the Royal College of Music and the Guildhall School of Music, and examiner for the Associated Board.

**BARNEVELD,** N. Y. See TRENTON, N. Y.

**BARNEVELDT,** bär'nĕ-vĕlt, **Jan van Olden,** Dutch statesman: b. 1549; d. 13 May 1619. He early showed himself zealous for the independence of the United Provinces, and as advocate-general of the province of Holland displayed profound views and great skill in business. He preserved his country against the ambition of Leicester; penetrated the secret plans of Maurice of Nassau, whom his fellow-citizens had elevated to the post of stadtholder; and his marked distrust of this prince placed him at the head of the Republican party, which aimed to make the stadtholder subordinate to the legislative power. Spain at that time made proposals for peace through the archduke, governor of the Netherlands. Barneveldt was appointed plenipotentiary on this occasion, and evidenced alike the skill of a statesman and the firmness of a republican. Maurice of Nassau, whose interest led him to prefer war, labored to prevent the establishment of peace; and Barneveldt was induced only by the most urgent solicitations of the states to retain the office which had been assigned to him, concluding in 1609 an armistice with Spain for the term of 12 years, in which the independence of Holland was acknowledged. His influence now became still greater, and he was more and more an object of jealousy to the house of Nassau. The hostile spirit of the opposite parties in the state was further increased by theological difficulties. In order to prevent a civil war Barneveldt proposed an ecclesiastical council, which resolved upon a general toleration in respect to the points in question. The states acceded at first to this wise measure, but at a later period the Nassau party persuaded them to adopt other views. This party represented the Arminians as secret friends of Spain. Maurice insisted upon a general synod, with a view, as he pretended, of putting an end to all religious quarrels; but Barneveldt persuaded the states to oppose this measure. Troops were now levied, without the consent of Maurice, to re-establish order in the cities where the Gomarists had excited disturbances. On the other side, the Nassau party redoubled its attacks upon Barneveldt, who, in answer to them, published that celebrated memorial in which he warns the United Provinces of the danger which threatened them from the other party. Maurice, however, procured the assembling of a synod at Dort, in 1618, to which almost all the Calvinistic churches of Europe sent deputies. They condemned the Arminians with the most unjust severity, and Maurice was encouraged by their sentence to adopt violent measures. He caused Barneveldt and other leading men of the Arminians to be arrested; and 26 bribed judges condemned to death as a traitor the man to whom his country owed its political existence. The old man of 72 ascended the scaffold, and suffered death with the same firmness which he had evinced under all the circumstances of his life. His two sons formed a conspiracy against the tyrant; William escaped, but Reinier was taken and executed. His mother, after his condemnation, threw herself at the feet of Maurice to beg for mercy, and to his question why she humbled herself thus for the sake of her son when she had not done it for her husband, made the memorable reply: "I did not ask pardon for my husband, because he was innocent; I ask it for my son, because he is guilty." Consult Motley, 'John of Barneveldt' (1874).

**BARNEY, Joshua,** American naval officer: b. Baltimore, Md., 6 July 1759; d. 1 Dec. 1818. He was captured by the British in March 1778, but exchanged in August of the same year; was captured again and held a prisoner till he escaped in 1781. In April 1782, he took the British ship *General Monk*, off Cape May; in November 1782, he carried dispatches to Dr. Franklin in France, and brought back a sum of money lent by the French government. In 1794 he went with Monroe to France, and for six years served in the French navy. In 1814 he commanded the fleet stationed in Chesapeake Bay.

**BARNFIELD, Richard,** English poet: b. Norbury, Shropshire, 1574; d. 1627. His lyrics, 'As It Fell Upon a Day' and 'If Music and Sweet Poetry Agree,' were long ascribed to Shakespeare and were included in 'The Passionate Pilgrim' (1599). Barnfield's works include 'The Affectionate Shepherd' (1594); 'Cynthia, with Certain Sonnets and the Legend of Cassandra' (1595); 'The Encomion of Lady Pecunia' (1598).

**BARNI,** bär-nē, **Jules Romain, French** scholar and critic: b. Lille, 1 June 1818; d. Mers, 4 July 1878. His efforts to propagate the Kantian philosophy through the medium of 'Observations on the Sense of the Sublime

and Beautiful' (1836); 'Foundations of Ethical Metaphysic' (1848), and 'Kantian Philosophy' (1850), earned him distinction; as did also, in another, but contiguous field, a 'History of Moral and Political Ideas in France in the Eighteenth Century' (1866).

**BARNSLEY**, England, town in the west riding of Yorkshire, 23 miles south by east of Leeds. It occupies the summits and slopes of two hills and is well built. Among the chief buildings are the public hall, built at a cost of over £26,000, and furnishing accommodations for various societies; the offices of the miners' association, the Beckett Hospital, the County Court, the offices of the Barnsley Banking Company, the parish church, Saint George's Church, the Congregational Church, a beautiful edifice and several other places of worship. Its staple industry is the manufacture of linen in a variety of forms, which is carried on to a great extent, both hand-looms and power-looms being used; linens are also printed here in a style similar to the cottons of Lancashire. There are numerous collieries in the neighborhood, among which the Oaks Colliery has been made memorable by several disastrous explosions. The town possesses a beautiful public park containing several monuments. It is on four railway lines and a canal, which facilitates its export of coal, mainly to Hull and London. A United States consul is stationed here.

**BARNSTABLE**, Mass., town, port of entry and county-seat of Barnstable County, 72 miles southeast of Boston, on the New York, New Haven & Hartford Railroad. Within its corporate limits are 12 villages, several of which, such as Hyannis, Osterville and Cotuit, are well-known summer resorts. The town has several public libraries and a State normal school. Farming, fishing and cranberry culture are the principal industries. The town is governed under the town meetings system. Pop. 5,000.

**BARNSTAPLE**, England, a town in Devonshire, 34 miles northwest from Exeter, on the right bank of the Taw, here crossed by a handsome bridge of 16 arches. It is locally styled Barum, and among its public edifices are a large 14th century church, a guildhall, and market buildings, the bridge buildings, Albert clock-tower, etc. Before the silting of the river Barnstaple was a seaport of some importance. Its manufactures consist chiefly of pottery, known as "Barum ware," lace, paper, furniture, toys, leather, gloves and collars; and ships and boats are built. The trade chiefly depends on the surrounding district. Barnstaple has existed since the reign of Athelstan in the 10th century, who built a castle here. It was incorporated in the reign of Henry I. Previous to 1885 the town returned two members to Parliament. Pop. 14,485.

**BARNUM, Frances Courtenay (Baylor)**, American novelist: b. Fayetteville, Ark., 1848. She has written 'On Both Sides,' an international novel (1886); 'Behind the Blue Ridge'; 'Juan and Juanita,' a story for boys and girls; 'Claudia Hyde' (1894); 'The Ladder of Fortune' (1899). She has also been a frequent contributor to magazines, and a writer of short stories. Since her marriage she has lived in Savannah, Ga.

**BARNUM, Phineas Taylor**, American showman: b. Bethel, Conn., 5 July 1810; d. Bridgeport, 7 April 1891. He was the son of a tavern-keeper and in his boyhood displayed a remarkable propensity for practical jokes upon his father's customers, as well as a decided turn for trade. Having accumulated a small sum of money, he opened a little miscellaneous store. Here he was very successful, and, taking advantage of the mania for lotteries which then prevailed throughout the country, he visited New York and obtained some insight into their management. Returning to his store, he immediately entered into this business upon a large scale, established agencies in various cities and towns, and realized considerable sums from the immense sales of tickets which he was thus enabled to make. The predominating trait in his character would not, however, permit him to settle down as a country storekeeper, and we soon hear of him as the editor of the *Herald of Freedom*, published in Danbury, Conn. In this undertaking he was also very successful from a pecuniary point of view, but his freedom of speech and the boldness of his opinions soon gained him many enemies, and he was several times sued for libel, and once confined in prison for 60 days. In 1834 he removed with his family to New York, having become much reduced in circumstances. Here he tried many ways to obtain a livelihood, but without much success, until 1835, when hearing of Joice Heth, a colored woman, the reputed nurse of George Washington, he visited her owners, and becoming satisfied that here was an opportunity of retrieving his broken fortunes, he became her purchaser for the sum of $1,000, which he had obtained from various friends. By widely advertising this curiosity, considerable excitement was created, and the receipts soon amounted to $1,500 per week. This was Barnum's first attempt as a public showman, and finding the business profitable, he collected a small company and traveled through the country, realizing large sums wherever he halted. In 1836 Joice Heth died, and a post-mortem examination proved her to have been but 75 or 80 years old, instead of 161, which was her reputed age. From 1836 until 1839 Mr. Barnum continued in the exhibiting business, but was then obliged to return to New York, again reduced to poverty. He now barely subsisted by writing occasional articles for Sunday papers, and by petty jobs. In 1841, the establishment known as Scudder's American Museum was announced for sale, and with a boldness almost unparalleled in mercantile transactions, Mr. Barnum negotiated for its purchase; without owning a dollar, he made satisfactory arrangements with its holders and took possession. Here his fortune turned; at the end of a year he was able to pay all the obligations which he had entered into on account of the museum. In 1848 he had added to it two other extensive and valuable collections, beside several minor ones, and single curiosities without number. It now became the most popular place of amusement in the United States. In 1842 he heard of Charles S. Stratton, of Bridgeport, then 5 years old, less than 2 feet high and weighing only 16 pounds. The boy became known to the world as Gen. Tom Thumb, and was exhibited in the United States

with astonishing success until 1844, when Mr. Barnum sailed with him for England. Throughout Great Britain he was received with a popularity surpassing even that of America, and for four months the receipts averaged $500 per day. Tom Thumb was presented to the royal families of England, France and Belgium, courted and caressed by the nobility and presented with costly gifts. In Coventry Barnum purchased the "Happy Family" of birds and animals, for which he paid $2,500. In 1847 he returned to America, where the "General" was again exhibited for a year with increased success, the receipts in the United States and Havana amounting to $150,000. Barnum conceived the idea of inducing Mlle. Jenny Lind to visit America, and entered into an agreement with her, by which he engaged her to sing in America for 150 nights at $1,000 per night, the expenses of herself and troupe to be defrayed by him. Jenny Lind arrived in New York 1 Sept. 1850. The excitement upon this occasion has perhaps never been equalled in America. She gave her first concert at Castle Garden, and from that time until June 1851, gave 93 concerts, which were a succession of triumphs, the gross receipts for the whole amounting to over $700,000. The tickets were generally sold at auction, the highest price paid for one ticket being in Providence, R. I., namely, $650. He continued before the public with varying success until 1855, when having built himself an extensive villa at Bridgeport, Conn., he retired from business and published his life, giving a full account of the various enterprises in which he had been engaged. He also devoted much of his time to farming, and made many improvements in Bridgeport. Two museums of his were burned in 1865 and 1868, and in 1871 he established "The Greatest Show on Earth," a combination of traveling circus and menageries. He was defeated for Congress in 1866, but was four times a member of the Connecticut legislature. Besides his 'Autobiography' (1854), he published 'The Humbugs of the World' (1865), and 'Struggles and Triumphs' (1869).

**BARNWELL, Robert Woodward,** American statesman: b. Beaufort, S. C., 10 Aug. 1801; d. 25 Nov. 1882. He was graduated from Harvard University in 1821; became a lawyer; was a member of Congress from South Carolina in 1829–33; a United States senator from that State, 1850–51; commissioner from South Carolina to confer with the Federal government regarding the proposed secession of the State in 1860; member of the Provisional Confederate Congress, 1861–62; a Confederate senator in 1862–66; and then president of the University of South Carolina (an office he had held in 1835–41) till 1873.

**BARNWELL, Robert Woodward,** American bishop of the Episcopal Church: b. Beaufort, S. C., 27 Dec. 1849; d. Selma, Ala., 24 July 1902. He prepared for the Episcopal ministry at the General Theological Seminary in New York, and was rector of Trinity Church, Demopolis, Ala., 1876–80; and of Saint Paul's, Selma, Ala., 1890–1900. In 1900 he was consecrated bishop of Alabama.

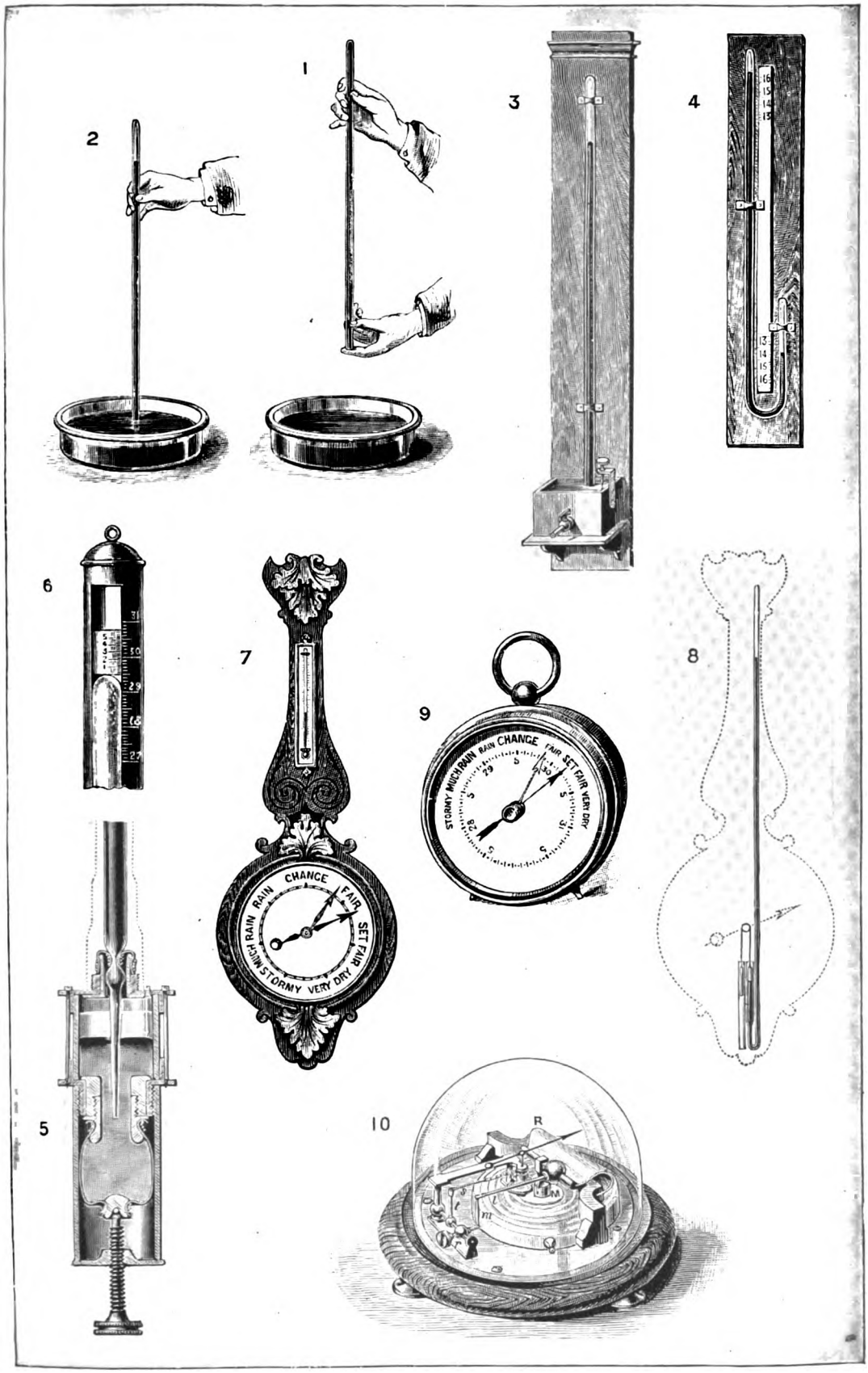
**BAROCCI,** bä-rōch'ē, or **BAROCCIO, Federigo,** Italian painter: b. Urbino, 1528; d. 1612. He received instruction from his father, who was a sculptor, and from Battista Franco. He visited Rome, where the genius of Raphael inspired him, and there he painted in fresco and was commended by Michelangelo. He spent his life at Urbino, where he executed many paintings, several showing the influence of Correggio. Most of his work is preserved in the churches of Urbino, the most important being his 'Saint Sebastian' in the cathedral. On a second visit to Rome he was employed on the decorations of the Belvedere in the Vatican, where jealous rivals tried to poison him. He suffered from the effects of the poison during the rest of his life. His 'Burning of Troy' is in the Borghese Palace at Rome. Others are in the Vatican and in the Florentine galleries. His 'Christ Crucified,' now in the Genoa cathedral is considered his greatest work. Consult Krommes, R. H., 'Studien zu Federigo Barocci' (Leipzig 1912).

**BAROCCO,** or **BAROQUE,** technical term, chiefly applicable to architecture, and household decoration. The term is derived from the Spanish *barrueco,* a large, irregularly-shaped pearl, and was for a time confined to the jeweler's craft. It indicates the more extravagant fashions of design that were common in the 17th and 18th centuries, chiefly in Italy and France, in which everything is fantastic, grotesque, florid or incongruous — irregular shapes, meaningless forms, and a lack of restraint and simplicity. The style may be said to have begun with Michelangelo, and was continued by Lorenzo Bernini, Carlo Maderno, Della Porta, Fontana, Longhena, Galilei and others. The baroque later developed into the fantastic style of interior detail known as rococo. (See ARCHITECTURE, HISTORY OF). Consult Gurlitt, 'Geschichte des Barockstiles in Italien' (Stuttgart 1887), and Ricci, 'Baroque Architecture and Sculpture in Italy' (London 1912).

**BAROCHE,** bä-rōsh, **Pierre Jules,** French statesman: b. Paris 1802; d. Jersey 1870. In 1847 he was elected member of the Chamber of Deputies for the department of Charente-Inférieure, where he steadily opposed the ministry of Guizot. He signed the *Acte d'Accusation,* drawn up by Odillon Barrot 23 Feb. 1848, in which they were accused of violating the rights of citizens, and of systematic corruption. On 2 Dec. 1851, Baroche was nominated president of the Council of State, an office in which he exhibited much ability and tact, and subsequently filled the offices of Minister of Foreign Affairs (1860), and Minister of Justice (1863). He was made a senator in 1864.

**BARODA,** Hindustan, city in the province of Gujerat, capital of the native state of Baroda, 240 miles north of Bombay, on the left bank of the Viswamitra, here spanned by four stone bridges. The city proper is surrounded by a wall, outside of which are large suburbs. The houses in general are very mean, but there are several palaces, some handsome houses belonging to the wealthy inhabitants, government offices, a high school and numerous temples. Baroda, because of its importance as a railroad centre between the coast and the interior, has considerable trade in the produce of the surrounding districts, grain, flax, cotton and tobacco. The town has a

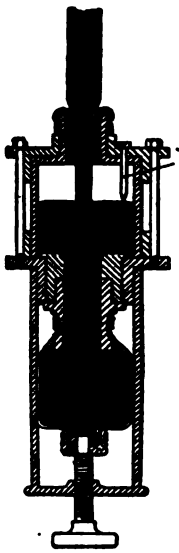
# BAROMETER




1, 2 Torricelli's Experiment with tube full of Mercury
4 Barometer with bent tube and scale
7 Common Wheel-Barometer or Weather-Glass
9 Aneroid Barometer
3 Barometer in its simplest form
5, 6 Fortin's portable Barometer — structural details
8 Internal structure of same
10 Internal Mechanism of Aneroid

splendid modern system of waterworks since 1892, supplied from a distance of 18 miles by the artificial lake covering 4.71 square miles. Baroda is the residence of the Ghaekwar, a protected Mahratta prince. Pop. (1911) 99,345. The state of Baroda, which has been tributary to Great Britain from 1802, has an area of 8,100 square miles and a population (1911) of 2,032,798.

**BAROMETER** (Greek, "weight-measure"), an instrument invented by the Italian physicist Torricelli, and used for determining the pressure of the atmosphere. (For an account of its early history see ATMOSPHERE). In its simplest form the mercurial barometer consists essentially of a vertical glass tube about a yard in length, closed at the top and open at the bottom, and partially filled with mercury, into a vessel of which its lower end also dips. In preparing the instrument for use, the tube is first completely filled with mercury; but as soon as it is free to do so the column of mercury in the tube sinks (leaving a vacuous space at the top of the tube) until it stands at a height (usually about 30 inches) such that the pressure of the column exactly balances that of the atmosphere. A graduated scale of metal or glass is provided, by means of which the difference in level between the top of the column and the surface of the mercury in the open vessel (called the "cistern") at the bottom can be measured with precision. In the Fortin instrument (the design commonly adopted for all but the most refined work) the cistern is closed below by a piece of flexible leather, which can be raised or lowered by means of a screw, in order to bring the surface of the mercury in the cistern to a certain fixed level, before the reading is taken. A pointed index, *k*, preferably of ivory, projects downward into the cistern from the upper cover, the position of its tip, with respect to the scale on the barometer tube above, being known. The mercury in the cistern being first brought accurately into contact with the extremity of *k*, the position of the upper end of the barometric column is read from the scale. The "apparent" height of the barometer is then known; but in order to deduce the "true" height, certain corrections must be applied. The most important of these is the correction for temperature. The scale from which the height of the column is read is longer when the temperature is high than when the temperature is low; and the mercury in the column is also less dense at higher temperatures than at lower ones. These two sources of error partially compensate each other; for at a high temperature the reduced density of the mercury tends to make the column stand too high, while the greater length of the scale at such a temperature tends to make the reading too small. The compensation is not perfect, however, and when the coefficient of expansion of the scale is known, a table of temperature corrections must be calculated, to reduce the direct reading to what it would have been if it had been taken at some fixed standard temperature. The temperature of melting ice is adopted, by universal consent, as the standard to which the "apparent" reading is to be reduced. Another important correction must be applied in order to allow for the variations of gravity with the latitude and elevation of the place of observation. Where gravity is relatively weak, a longer column of mercury will be required to balance a given atmospheric pressure than would be required to balance the same pressure in a region where gravity is stronger. All the barometric readings taken at the International Bureau of Weights and Measures, near Paris, are reduced to the values they would have if made at the level of the sea, in latitude 45°; and this practice is growing in favor among physicists generally. To reduce a barometric reading to sea-level and to latitude 45°, it is merely necessary to multiply the observed height of the column (after applying the correction for temperature) by the expression $(1 - .00259 \cos L)(1 - .00000006 H)$, where L is the latitude of the place of observation, and H is its height above the sea, in feet. Several secondary corrections have also to be considered, when great refinement is desired. Prominent among these is the correction for "capillarity," which is made necessary by the fact that the mercury does not stand as high in a small barometric tube as it does in a larger one, on account of the surface tension (q.v.) of the liquid. No simple formula for this correction can be given, and it varies somewhat according as the barometer is rising or falling at the time of the observation. Tables for finding the capillary correction are given in Guyot's meteorological and physical tables, published under the direction of the Smithsonian Institution at Washington. An excellent table is also given in Guillaume's 'Thermométrie de Précision,' where the elaborate precautions taken in filling the modern precision barometer are also described.




The barometer is a simple instrument, and of the greatest use in all kinds of scientific work. The greatest fault of the mercurial instrument is the difficulty of transporting it without breakage and without destroying the vacuum in the upper part of the tube by the admission of air bubbles. Instruments like the Fortin type may be transported by screwing up the leather bottom until both the cistern and the tube are completely filled with mercury, then revising the barometer, and carrying it to its destination bottom side up. The "aneroid" barometer, although not nearly so accurate as the mercurial instrument, possesses the advantage of portability, since, as its name signifies, it does not contain any liquid; and it is therefore used to a considerable extent in the determination of the heights of places above the sea. (See HYPSOMETRY). Various forms of the aneroid exist. One of these consists of a cylindrical metal box, exhausted of air, and having a lid of thin, corrugated metal. The lid, which is highly elastic, yields to every change of atmospheric pressure, and delicate multiplying levers transmit its motions to an index that

moves over a graduated scale, whose divisions are marked on the dial empirically, by comparison with a mercurial barometer. For further information concerning the barometer and its use, consult Stewart and Gee, 'Elementary Practical Physics'; Glazebrook and Shaw, 'Practical Physics'; Abbe, 'Meteorological Apparatus and Methods'; Guillaume, 'Thermométrie de Précision.' See also METEOROLOGY.

**BAROMETRIC LIGHT,** a name sometimes given to the faint glow (first observed by Jean Picard in 1675) produced in the vacuous space of a mercurial barometer when the instrument is agitated. The light is given off by the mercurial vapor (or other highly attentuated gas) that is present, under the influence of the electricity generated by the friction of the mercury against the glass. Advantage has been taken of this phenomenon in the construction of "self-acting" Geissler tubes, the electricity required to excite them being generated, when they are inverted or shaken, by the friction of a small quantity of mercury introduced before the exhaustion. No very brilliant results can be obtained in this way, however.

**BAROMETZ.** See CIBOTIUM.

**BARON,** bä-rôñ, **Michel,** or **BOYRON,** French comedian: b. 1653, and long attached to Molière's company. For nearly 30 years he played with great success, and retired from the stage in 1691 without any apparent reason. In 1720, however, he again returned, and was received with immense enthusiasm, playing, with great success, even the most youthful parts. In 1729 he was taken ill while on the boards, and died shortly after.

**BARON.** In the feudal system of the Middle Ages, the immediate tenant of any superior was originally called his baron. In old records the citizens of London are so styled, and the members of the House of Commons, elected by the Cinque-Ports, were called barons. This title was introduced into England by William the Conquerer to signify an immediate vassal of the Crown, who had a seat and vote in the royal court and tribunals, and subsequently in the House of Peers. It was the second rank of nobility, until dukes and marquises were created and placed above the earls, and viscounts also set above the barons. It is now the lowest rank of the peerage, and is held by prescription, patent or tenure. The barons were anciently divided into greater barons, or such as held their lands of the king *in capite;* and lesser barons, such as held their lands of the greater barons by military service. In Germany the ancient barons of the empire were the immediate vassals of the Crown. They appeared in the imperial court and diet, and belonged to the high nobility. But these ancient feudatories were early elevated to the rank of counts or princes. A baron of the United Kingdom has the title of "right honorable lord," etc., and should be addressed as "my lord" or "your lordship." His wife claims also the title of "right honorable," and may be addressed as "madam," or "your ladyship." The coronation robes of a baron differ from those of the other peers in having but two rows of spots on the mantle; and the parliamentary robes, in having but two guards of white fur, with rows of gold lace. The right of wearing a coronet was first conferred on barons by Charles II. It is adorned with six pearls, set at equal distances, of which four are usually shown. Until the passing of the Judicial Act of 1873 — under which the Courts of Exchequer were consolidated in the Supreme Court of Judicature — certain judges in England or Ireland were called barons, the chief baron being president of the Court of Exchequer, the title is thus now extinct as applied to the judiciary.

**BARONET,** the lowest of the hereditary dignities in Great Britain and Ireland, originally instituted by James I, 22 May 1611. The first person to receive the honor was Sir Nicholas Bacon of Redgrave, whose successors in the title have ever since held the rank of premier baronet of the kingdom. Baronets are created by letters patent under the great seal, and the honor is generally given to the grantee and the heirs male of his body lawfully begotten, though sometimes it is entailed on collaterals and even to heirs female. The order was created nominally to assist in the plantation of Ulster — all baronets are thus entitled to bear on their coats of arms the "bloody hand" of Ulster — but really in order to raise money for the king, and each baronet, on his creation, was obliged to pay into the treasury a sum amounting to a little less than $5,500. According to the terms of its foundation the dignity could be conferred only on those who had the right by inheritance from at least a grandfather to wear coat-armor, and whose income from lands was not less than $5,000 per annum. In 1622 there were 200 baronets in England, this being the number to which the order was originally limited. Charles I and subsequent sovereigns disregarded altogether the original limitation of the number. Precedence is given to baronets before all knights, except those of the Garter, bannarets created on the field and privy-councillors. An order of Baronets of Ireland was also instituted by James I, for the same purpose and with the same privileges as the baronets of England. Since the union, in 1801, none have been created otherwise than as baronets of the United Kingdom. Charles I instituted an order of baronets of Scotland and Nova Scotia in 1625 in accordance with the intentions of his father, James I, who had granted (1621) the territory of Acadia to Sir William Alexander, afterward Earl of Stirling, to be held by him as a feudal colony; the number was fixed at 150, and in 10 years 107 were created — 34 baronies in what is now New Brunswick, 15 in Nova Scotia, 15 in Cape Breton and 34 in Anticosti. The colony, theoretically a part of the kingdom of Scotland, was an entire failure, and the territory formally ceded to the French by the Treaty of Breda in 1667. Since the union of the parliaments in 1707 no new baronets specially connected with Scotland have been created.

**BARONIUS, Cæsar,** Italian ecclesiastical historian: b. Sora 1538; d. 30 June 1607. He was educated at Naples; in 1557 went to Rome; was one of the first pupils of Saint Philip of Neri, and member of the oratory founded by him; afterward cardinal and librarian of the Vatican Library. He owed these dignities to the services which he rendered the Church by his

edition of the Roman Martyrology, 'Ecclesiastical Annals,' in reply to the Protestant 'Magdeburg Centuries,' comprising valuable documents from the papal archives, on which he labored from the year 1580 until his death. They were continued, though with less power, by other writers, of whom Raynaldus takes the first rank. He has been called, after Eusebius, "the Father of Ecclesiastical History."

**BARONS' WAR,** the war carried on for several years by Simon de Montfort and other barons of Henry III against the King, beginning in 1263. See also MONTFORT, SIMON DE.

**BARONY,** the lordship or fee of a baron, either temporal or spiritual. Originally every peer of superior rank had also a barony annexed to his other titles. But now the rule is not universal. Baronies in their first creation emanated from the king. Baronies appertain also to bishops, as formerly to abbots, William the Conquerer having changed the spiritual tenure of frank-almoyn, or free alms, by which they held their lands under the Saxon government, to the Norman or feudal tenure by barony. It was in virtue of this that they obtained seats in the House of Lords. The word is commonly applied in Ireland to a subdivision of a county.

**BAROSCOPE,** an instrument for showing that bodies are supported by the buoyancy of air, in the same manner as they are by that of water, though in a much less degree.

**BAROTSE,** bä-rŏt'sę, a south African people inhabiting a region in the west of Rhodesia, extending from the Chode River northward to the Kabompo. They are a branch of the Bechuanas who have migrated northward, and it would appear that they were long subject to a Basuto tribe called the Makololo. About 1860, however, they threw off the yoke of their oppressors and almost exterminated them, but they still speak the language of the Makololos. From 1890 King Lawanika acknowledged the virtual supremacy of Great Britain, and in 1898 the British South African Company obtained complete administrative powers. Their country, a treeless alluvial plain called Barokeland or northwestern Rhodesia, was amalgamated 4 May 1911 with northeastern Rhodesia under the title of northern Rhodesia. Area 290,000 square miles. Pop. 870,000, including 2,250 Europeans.

**BAROUCHE,** a four-wheeled carriage with a falling top. There are usually two inside seats in which four persons can sit.

**BARQUESIMETO,** bär-kę-sę-mă-tō, Venezuela, city, capital of the state of Lara; is situated in a high plain, on the Barquesimeto River. It was founded by the Spaniards in 1552. The town is well built, and has wide streets, and among its prominent buildings are the government palace, barracks, market and cathedral. It is the seat of a college and other educational institutions. It is the centre of a fertile agricultural district and, owing to its excellent transportation facilities, controls important commercial interests. Coffee of excellent quality is grown here, and with cocoa, sugar and rum, forms the principal article of trade. It was almost completely destroyed by the great earthquake of 1812 and suffered severely during the War of Independence and the later civil wars. From 1830 to 1881 it was the capital of the state of the same name.

**BARR, Amelia Edith** (HUDDLESTON), American novelist: b. Ulverstone, Lancashire, 29 March 1831. Educated at the Glasgow High School, Scotland, she married Robert Barr in 1850. In 1854 the family moved to Texas and there, in 1867, her husband and three sons died of yellow fever at Galveston. Soon after this event she removed to New York where she began writing for the *Christian Union,* and other magazines. Her first book, 'Romance and Reality' (1872) was the earliest of more than 60 volumes from her pen. She is the author of 'Jan Vedder's Wife' (1885); 'A Daughter of Fife' (1885); 'A Bow of Orange Ribbon' (1886); 'A Border Shepherdess' (1887); 'Friend Olivia' (1890); 'A Sister of Esau' (1891); 'Remember the Alamo' (1893); 'Prisoners of Conscience' (1897); 'I, Thou and the Other One' (1899); 'Trinity Bells' (1899); 'The Maid of Maiden Lane' (1909); 'The Lion's Whelp' (1901); 'Souls of Passage' (1901); 'Fleet of Clay' (1901); 'Bernicia' (1895); 'The Black Shilleys' (1903); 'The Belle of Bowling Green' (1904); 'Master of His Fate' (1901); 'The Song of a Single Note' (1902); 'Cecilia's Lovers' (1905); 'The Heart of Jessy Laurie' (1907); 'The Strawberry Handkerchief' (1908); 'The House on Cherry Street' (1909); 'The Hands of Compulsion' (1909); 'The Reconstructed Marriage' (1910); 'Sheila Vedder' (1911); 'A Maid of Old New York' (1911); 'All the Days of My Life' (1912); 'Playing with Fire' (1913); 'The Winning of Lucia' (1914); 'The Measure of a Man' (1915); Three Score and Ten' (1915), an autobiography; 'Joan' (1916); 'Christine: A Fife Fisher Girl' (1917).

**BARR, James,** Canadian author: b. Wallacetown, Ontario, 1862. He engaged in journalism in that province, the United States and in London; and under the pen-name of ANGUS EVAN ABBOTT has contributed much to magazine literature. Among his separate publications are 'American Humorous Verse' (1891), and the American volume in the 'International Humorous Series' (1893), the last containing a biographical index of nearly 200 American and Canadian humorists, and several novels. He is a brother of the late Robert Barr (q.v.)

**BARR, Robert,** Scottish novelist: b. Glasgow, 16 Sept. 1850; d. 22 Oct. 1912. He spent his childhood in Canada, drifted into journalism and in 1876 joined the staff of Detroit *Free Press,* and wrote under the name of LUKE SHARP. He went to London in 1881 and in 1892 founded *The Idler* with Jerome K. Jerome, but retired in 1895 to devote himself to fiction. He is author of 'In a Steamer Chair' (1892); 'In the Midst of Alarms' (1894); 'The Face and the Mask' (1895); 'One Day's Courtship' (1896); 'A Woman Intervenes' (1896); 'Countess Tekla' (1899); 'The Unchanging East' (1900); 'The Victors' (1901); 'A Prince of Good Fellows' (1902);

'The Tempestuous Petticoat' (1905–12); 'Stranleigh's Millions' (1909); 'The Sword Maker' (1910); 'The Palace of Logs' (1912); 'The O'Ruddy,' with Stephen Crane (posthumous, 1913).

**BARRA,** a small Mandingo kingdom of western Africa, near the mouth of the Gambia, with an estimated population of 200,000, its men being remarkable for their fine proportions. The surface, which is fertile, but rather marshy, is well cultivated. The territory is a British protectorate. The English have built the port of Albreda on the south bank, from which considerable trade is carried on. The chief town is Barrinding, where the so-called king resides.

**BARRA,** Scotland, an island forming part of the Outer Hebrides, Inverness-shire, eight miles long and from two to five wide, and almost entirely composed of gneiss, which on the west coast forms huge rocky barriers. On these the Atlantic, beating with all its force, has hollowed out vast caves and fissures. In the interior not merely the hollows and valleys, but many of the loftiest hills are clothed with fine pasture, on which large herds of cattle and flocks of sheep are reared. The coasts abound with fish, and the island forms a fishing centre of some importance. There are many standing stones and other antiquities. The inhabitants, about 2,500, all speak Gaelic. South of Barra is the islet of Berneray, with the highest lighthouse in Great Britain, 683 feet above high water and visible for 33 miles.

**BARRACAN,** strictly, a thick, strong fabric made in Persia and Armenia, of camel's hair, but the name has been applied to various wool, flax and cotton stuffs.

**BARRACK-ROOM BALLADS.** Mr. Kipling's 'Ballads and Barrack-Room Ballads' (1892) is on the whole a highly original as well as significant volume. Far surpassing his 'Departmental Ditties,' it established his fame as a poet, and contains, indeed, those of his poems which, with the "Recessional" and a few others, have remained the greatest popular favorites. The collection is made of the Barrack-Room Ballads proper, most of which had already appeared in the *National Observer,* edited by W. E. Henley; of other poems which were reprinted from *Macmillian's Magazine, The Saint James' Gazette,* etc.; and of still others which now were printed for the first time. The 21 Barrack-Room Ballads proper bear somewhat the same relation to 'Soldiers Three' as is borne by 'The Departmental Ditties' to 'The Plain Tales from the Hills.' Written mainly in Cockney dialect, salted with slang and soldier-lingo, they voice the sentiments and experiences of "Tommy Atkins" as he figures in various parts of the empire. Here the poet's magic has transfigured his material, and has added a new province to poetry. All are singing ballads, with catchy choruses and jingling refrains that contribute largely to their spirited effect. Their sentiment ranges through the rollicking fun of "Oonts" and "Fuzzy-Wuzzy," the satire of "Tommy," the grim tragedy of "Danny Deever," and the romantic longing of "Mandalay." These five, at least, have been sung throughout the English-speaking world.

The narrative ballads of the collection and the other poems in ordinary English are as a whole less successful. Though much of their subject matter is fresh, they often follow conventional and even outworn methods and styles. "The Ballad of East and West" which avers that "the East is East and the West is West, and never the two shall meet," rather too strongly suggests Macaulay. The highly-mannered "English Flag," which asks "What should they know of England who only England know?" is interesting as perhaps the first of Kipling's poems of imperial sentiment. The poetry of the engine-room, which this poet has since extensively cultivated, appears in the "Clampherdown" and the "Bolivar," the latter truly excellent, and probably the best of the narrative ballads. But more famous, perhaps, is "Tomlinson," a stinging satire, with its galaxies, comets and suns, its glimpses of heaven and hell, all of which teleological and astronomical accessories have since figured prominently in Mr. Kipling's verse. Yet, with all its limitations, 'Barrack-Room Ballads' is a brilliant, original and, on the whole, delightful volume, which cannot safely be neglected by any lover of poetry. Criticism has run the gamut from uncritical eulogy to hypercritical depreciation. Consult Richard LeGallienne, 'Rudyard Kipling.' Explanatory notes on the poems are given by Durand, 'Handbook to the Works of Rudyard Kipling' (pp. 26–92).

MARION TUCKER.

**BARRACKPUR,** bă-răk-poor', India, a town and cantonment in Bengal, on the Hugli, 15 miles north of Calcutta and on the East Bengal Railway. In the vicinity is the suburban residence of the Viceroy of India, within a park four miles in circuit. A Sepoy mutiny, the prelude to the great outbreak at Meerut in May, took place here in February 1857. A mutiny had previously taken place in 1824. Barrackpur is also known as North Barrackpur to distinguish it from South Barrackpur or Agarpara, midway between it and Calcutta. It is the capital of a sub-district which was formed in 1904. Many inhabitants are employed in the mills, which are just outside the towns. From the salubrity of its air Barrackpur is a favorite retreat for Europeans from Calcutta. Pop. 18,000.

**BARRACKS,** a name originally given to temporary accommodation for troops, but now designating permanent and commodious erections, in which troops are lodged. The introduction of barracks into England was opposed as dangerous to liberty, by estranging the soldier from the citizen, and fitting him to become a tool of despotism; but the billeting of soldiers upon citizens had grown to be so burdensome to communities that after the close of the 18th century extensive barracks were built at convenient stations all over the United Kingdom. Much improvement has been effected in the construction and arrangement of English barracks during the last half-century; and separate quarters are now provided for married soldiers. The construction and repair of barracks is part of the duty of the royal engineers; their equipment and allotment is entrusted to a barracks section of the army service corps. In the United States the term is officially used to designate important military posts, such as the Columbus Barracks, San

Diego Barracks, Washington Barracks and others.

**BARRACOON,** a negro barrack or slave depot, formerly plentiful on the coasts of Africa, Cuba and Brazil.

**BARRACUDA,** băr-ra-koo'da, an oceanic fish of the family *Sphyrænidæ,* of which about 20 species inhabit the warm seas of the whole world. All are elongate, pike-like fishes, with long, pointed jaws filled with sharp teeth. They are often of large size, are powerful swimmers, active and voracious, and, like the bluefish, prey upon schools of smaller fishes. Several species occur on the American coasts. The great barracuda "picuda," or "becuna" (*Sphyræna picuda*), is common throughout the West Indies and northward to South Carolina, and reaches a length of six feet. It is the largest and most voracious of the genus, is as fierce as a shark and is sometimes dangerous to bathers. Other West Indian species are those called guaguanche and picudilla. These are smaller, as is a third species also, which is common along the Atlantic coast of the United States. Two or three species are found on the Pacific coast from California southward. One of these (*S. argentea*) is a long and slender species, known as the California "barracouta," and highly valued for food. It closely resembles the typical European barracuda (*S. spet*), locally known as "spet" and "sennet," and one of the important food fishes of the Mediterranean.

**BARRAGE, Tir de** (Fr.), curtain fire: in artillery attack against a position, as a trench, the enemy position is first "prepared," i.e., heavily bombarded. The cannon range is then extended to behind the trench, a curtain of fire preventing the survivors of the bombardment from retreating, and also preventing reinforcements from reaching them from the rear. Under cover of the barrage the attacker's infantry is thrown forward to complete the capture of the position.

**BARRAMUNDA,** băr-ra-mŭn'da, or **BURNETT SALMON,** names in Australia for a mud-fish (*Ceratodus*), remarkable as a survival of the very ancient group Dipnoi. See LUNGFISH.

**BARRANDE,** ba-rănd, **Joachim,** French geologist: b. Sangues in the department of Haute Loire, 11 Aug. 1799; d. Vienna, 5 Oct. 1883. His specialty was the Silurian formations in Bohemia, his writings including 'Système silurien du centre de la Bohême' (1852 and 1887); 'Colonie dans le bassin silurien de la Bohême' (1860); 'Documents sur la faune primordiale et la Système Taconique en Amerique' (1861); 'Représentation de colonies de la Bohême dans le bassin silurien du nordouest de la France' (1853); 'Céphalapodes, etudes générales.'

**BARRANQUILLA,** bă-ran-kē'lya, Colombia, the chief fluvial port of Colombia and the capital of the department of Atlantico, with its harbor at Puerto Colombia, sometimes called Savanilla. Situated on the Magdalena River, near its mouth, and in lat: 10° 29′ N., Barranquilla is connected with Puerto Colombia by railway. The climate is hot and damp; nevertheless it is a busy, well-built city, possessing a covered market, theatre, hospital, five churches, two banks, two large flour mills and sugar, chocolate and textile factories, etc. The town has electric light and tramways, telephone service and good water supply. Pop. 49,000.

**BARRANTES Y MORENO,** bă-ran'tās-ē-mō-rā'nō, **Vincente,** Spanish writer: b. Badajoz, 24 March 1829; d. Pozuelo (Madrid), 16 Oct. 1898. He first studied theology, but in 1848 settled in Madrid to pursue literature; held responsible government offices, and became a member of the Academy in 1872. Among his works are the stories, 'Always Late' (1851); 'Juan de Padilla,' 'The Widow of Padilla,' and a series of historical studies, dealing with local Philippine and Estremaduran topics.

**BARRAS,** bä-räs, **Paul François Jean Nicolas, Comte de,** French statesman: b. Fox-Amphoux (Var), 30 June 1755; d. 29 Jan. 1829. When the Revolution broke out he immediately showed himself an opponent of the court and had a seat in the *tiers état,* while his brother was sitting among the nobility. He took part in the attacks upon the Bastile and the Tuileries, was elected a juryman at the tribunal of Orleans, and in September a member of the national convention, where he voted for the death of Louis XVI. Although he had established his reputation as a patriot, yet he was distasteful to Robespierre whom he suspected as a half-hearted revolutionary, and he resolved to involve him in the great proscription which he then meditated. Barras therefore joined those determined to overthrow Robespierre, and took an important part in the events of the 9th Thermidor (27 July 1794). He was entrusted with the chief command of the forces of his party, repelled the troops of Henriot, and made himself master of Robespierre. On 4 Feb. 1795 he was elected president of the convention. The 13th Vendémiaire (5 Oct. 1795), when the troops of the sections which favored the royal cause approached the convention, Barras for a second time received the chief command of the troops, and employed Bonaparte in the adoption of rigorous repressive measures. In his report he attributed the victory to this young general, and procured for him the chief command of the army of the interior. His important services promoted him to the Directory. Barras soon perceived that Bonaparte would give a decisive superiority to him who should obtain an influence over him; and therefore he displaced Carnot from the War Department and took possession of it himself. This separated them, and Carnot for some time took part with the council, where a party had been formed to restrain the power of the Directory, and particularly that of Barras. The rupture could only terminate with the ruin of one of the parties: that of the council fell by the events of the 18th Fructidor (4 Sept. 1797), in which Barras took a leading part. He arranged the marriage of Bonaparte with the widow Beauharnais. From this period he governed absolutely until 13 June 1799, when Siéyès entered the Directory. Nevertheless Barras succeeded in preserving his seat, but he became a victim of the 18th Brumaire when Bonaparte overthrew the Directory by means of the *coup d'état* (9 Nov. 1799). He afterward retired to Brussels, where he lived for several years; but finally received permission to repair to the south of France. His memoirs (invaluable for the inner history of the Revolu-

tion) were published in French and English (1895–96).

**BARRATRY**, a law term applied to (1) the offense committed by the master of a vessel of embezzling or injuring goods committed to his charge for a voyage and against which insurance may be effected. Barratry has also been defined to be an unlawful or fraudulent act, or very gross or culpable negligence, of the master or mariners of a vessel in violation of their duty as such, and directly prejudicial to the owner, and without his consent; (2) the offense of frequently exciting or stirring up law suits or quarrels among one's neighbors or in society generally. An indictment for this offense must charge the offender with being a common barrator, and the proof must show at least three instances of offending. It must be distinguished from "maintenance"—the officious intermeddling with suits which do not concern the party, by lending personal or other assistance; and on the other hand from "champerty" an illegal bargain made between one of the parties to a suit and a third party whereby it is agreed that the latter shall share in the proceeds of the action, in return for financial support in its pursuit. An attorney is not liable to indictment for maintaining another in a groundless action. In New York, and in some other States, barratry is defined to be the practice of exciting groundless judicial proceedings, and is a misdemeanor.

**BARRE**, bär, **Antoine Joseph le Fèvre de la**, French naval officer: b. about 1600; d. 4 May 1688. He was appointed governor of Guiana in 1663, and retook Cayenne from the Dutch. In 1667 he defeated the English in the Antilles, forcing them to raise the blockade of Saint Christopher. In 1682 he was appointed to the governorship of Canada, taking the place of the Count de Frontenac. He was, however, recalled in 1684, for having by his irresolution caused the failure of the expedition to treat with the savages.

**BARRÉ, Isaac**, British officer: b. Dublin 1726; d. London, 20 July 1802. He was wounded at Quebec, was beside Wolfe when he fell, and figures in West's picture of 'The Death of Wolfe.' He entered Parliament in 1761, and held office successively under Lord Bute, Pitt, Rockingham and Lord Shelburne. In Pitt's second administration he exposed the corruptions of the ministry, was a strong opponent of Lord North's ministry and opposed the taxation of America. The town of Barre, Mass., was named in his honor.

**BARRE**, bär'rā, a group of Arawakan tribes dwelling along the upper Rio Negro in northwestern Brazil and the adjoining districts of Venezuela. They are extremely aggressive, and their language is extending rapidly throughout that region.

**BARRE**, bär're, Mass., town in Worcester County, on the Ware River and on the Boston and Maine and New York Central railroads, 21 miles northwest of Worcester. An institute for feeble-minded children, and the Stetson home for poor boys are established here, and there are cotton, woolen and straw factories, municipal waterworks, a library and museum. Barre was settled about 1775 and was named after Col. Isaac Barre (q.v.). Pop. 3,000.

**BARRE**, Vt., city in Washington County, on the Central Vermont, the Barre and Chelsea and the Montpelier & W. R. railroads, six miles southeast of Montpelier. Barre has a reputation as one of the most important seats of the granite industry in the United States, engaging 88 of the city's industrial establishments. It contains, besides granite quarries, several industrial plants connected therewith. The United States census of manufactures for 1914 recorded 110 industrial establishments of factory grade, employing 2,668 persons, of whom 2,357 were wage earners, receiving $1,904,000 in wages annually. The capital invested aggregated $2,598,000, and the value of the year's output was $4,292,000; of this, $2,956,000 was the value added by manufacture. There are also a national and two savings banks; a public library; opera house; Goddard Seminary; a home school for young men and women, with four courses of study; Spaulding High School; Burns Monument; daily and weekly newspapers. It was settled about 1788, organized as a town in 1793 and received a city charter in 1894, under which the government is vested in a mayor elected annually and a city council. The waterworks and sewage system are owned and operated by the city. Pop. (1910) 10,734; (1914) 11,706.

**BARREIRO**, bą-rā'ç-rō, **Juan Baptista Hernandez**, Cuban lawyer: b. Havana about 1842. He acquired a liberal education, and amassed large wealth in the practice of his profession. He was professor of Roman law in the University of Havana for 30 years; and later became dean of the law faculty in the university. In February 1900, while acting as first assistant mayor of Havana, he was appointed a member of the new Cuban Civil Cabinet, and given the portfolio of public education.

**BARREL**, a hollow vessel made of staves set on end, arranged around a circle, and bound together with hoops. By each stave being made wider in the middle and tapering a little toward the ends, the barrel is of larger diameter, or bulges, in the middle. The bevelled edges of the staves cause them to fit closely together, making a tight joint along their length. The ends are closed by circular heads, the edges made thin to fit into a groove cut to receive them near the ends of the staves, in which they are held fast by driving the hoops upon the swell of the barrel. The construction of the barrel is ingeniously adapted for combining great strength with lightness. It resists pressure from without by the arched arrangement of the staves; and the hoops secure it from the expansive force of gases often generated in its contents. Its form is the most convenient for transportation, admitting of the vessel being rolled or rapidly swung by hooks placed under the chine or ends of the staves. In the form of kegs, firkins, liquor casks, butts, hogsheads, etc., they are met with everywhere. Yet the Chinese, with all their ingenuity, it is said, have never made a barrel. Formerly barrels were constructed entirely by hand, the cooper shaving the staves with the draw knife, and shaping them by clamps. But machines are now applied to this purpose, by which the work is done much more expeditiously. See COOPERAGE.

As a measure of capacity, the barrel is of variable dimensions, differing in size with the materials it is designed to hold. In wine measure the barrel must contain 31½ gallons. A barrel of beer in England is equal to 36½ imperial gallons. In the United States a barrel of flour must contain 196 pounds; and a barrel of beef or pork, 200 pounds. The measure of capacity called barrel bulk is five cubic feet. Barrel is also used to express any thing long and hollow, as a gun-barrel. It is also applied to the cylinder in a watch, about which the spring is coiled; and in anatomy, to the "cavity of the tympanum" of the ear.

**BARREN GROUNDS,** the name given to a large tract in the Northwest Territories of Canada, extending northward to the Arctic Ocean between Great Bear and Great Slave lakes and Hudson Bay. It consists largely of swamps, lakes and bar rock, and a comparatively small part of it is yet well known. The vegetation chiefly consists of dwarf birches and willows, mosses and lichens. The animals include the reindeer, musk-ox, beaver, polar bear, wolves, foxes, etc.

**BARREN ISLAND,** a volcanic island in the Andaman Sea, about lat. 12° 15′ N.; long. 93° 54′ E. Its diameter is about two miles, with submarine slopes plunging rapidly to a depth of more than 800 fathoms. There is an ancient crater over a mile in diameter, from the centre of which a newer cone rises to a height of 1,015 feet. The volcano was active in 1789 and 1803, but is now dormant. A small island near Coney Island, New York, is also known as Barren Island.

**BARREN MEASURES,** the name given to certain groups of strata associated with the coal measures, but which contain no workable deposits. In the United States there are two so-called barren stages, a lower intervening between the lower productive and the upper productive measures, and an upper lying at the base of the Permian System.

**BARRÈS,** bą-rĕs, **Maurice,** French novelist: b. Charmes-sur-Moselle, 1862. His earlier writing as exemplified in his 'Sous l'œil des barbares' (1888); 'Un homme libre' (1889); and 'Le jardin de Bérénice' (1891), is more or less decadent in character, but his later work is much more forceful, and inculcates a healthful spirit of nationalism. 'Les déracinés' (1897); 'L'appel au soldat' (1900); 'Leurs figures' (1902); 'Au service de l'Allemagne' (1905); 'Ce que j'ai vu à Rennes' (1904); 'Le voyage de Sparte' (1906); 'La maitresse servante' (1911); 'En Italie' (1912); and, his autobiographical 'Vingt-cinq années de vie littéraire' (1908) are among the best of his later writings. In 1889 he was elected as a Nationalist to the Chamber of Deputies. In 1906 he was re-elected and was also admitted to membership in the French Academy. Consult Huneker, J. G., 'Egoists, a book of Supermen' (New York 1909).

**BARRETT, Benjamin Fisk,** American Swedenborgian clergyman: b. Dresden, Me., 1808; d. Germantown, Pa., 6 Aug. 1892. He was graduated from Bowdoin College in 1832, and held Swedenborgian pastorates in New York, Cincinnati and Philadelphia. He was a voluminous writer and industrious editor of books and periodicals relating to Swedenborgianism. Chief among them are 'Life of Swedenborg' (1841); 'Letters on the Divine Trinity' (1860; 4th ed., 1873); 'Catholicity of the New Church' (1863); 'Episcopalianism' (1871); 'New View of Hell' (1870; 5th ed., 1886); 'Swedenborg and Channing' (1878); 'Heaven Revealed' (1885).

**BARRETT, Charles Simon,** American agriculturist: b. Pike County, Ga., 28 Jan. 1866. He received a normal school education at Bowling Green, Ky., Lebanon, Ohio, and Valparaiso, Ind. He was engaged in general farming and teaching until 1903, when he began organizing farmers. In 1905–06 he was president of the Georgia Farmers' Union, and since then has been national president of the Farmers' Union, which has a membership of 2,500,000 in 31 States. He was a member of Roosevelt's Country Life Commission and was appointed by Governor Hoke Smith to represent the State of Georgia at the first governors' conference held in Washington, D. C. He was appointed delegate to the International Agricultural Institute, Rome, by Secretary of State Bryan. He is editor of the *National Field,* the official organ of the National Farmers' Union. He is author of 'Mission, History and Times of the Farmers' Union' (1909).

**BARRETT, George Hooker,** American actor: b. Exeter, England, 9 June 1794; d. 5 Sept. 1860. He left England with his mother, an actress of some celebrity, and arrived at Boston in October 1796; he made his first appearance the same year in the part of Cora's child, in 'Pizarro,' at the age of two years. He commenced playing in New York in 1806, at the Park Theatre, in the part of 'Young Norval,' and became manager of the Bowery Theatre, New York, in 1826, in company with E. Gilbert. He afterward visited England, and in 1837 performed at Drury Lane Theatre, London, under the management of Alfred Bunn. He was also manager of the Tremont Theatre, Boston, and in 1847 opened the Broadway Theatre, New York, but he did not retire from the stage. His favorite characters were in genteel comedy, but he also acted in farce and low comedy with great success. From his elegance and stateliness he was known by the sobriquet of "Gentleman George."

**BARRETT, John,** American diplomat and internationalist: b. Grafton, Vt., 28 Nov. 1866. Attended Vermont Academy, Saxton's River, Vt.; Worcester (Mass.) Academy, and was graduated from Dartmouth College, Hanover, N. H., 1889, having in the meantime taken one year's course (1888), at Vanderbilt University, Nashville, Tenn. Professor of English, Hopkins' Academy, Oakland, Cal., 1889–90, and connected with newspapers of San Francisco, Seattle, Tacoma, and Portland, Ore., 1890–94. When assistant editor *Evening Telegram,* Portland, Ore., he was appointed United States Minister to Siam, 1894, where he settled the famous Cheek case involving several millions of dollars and interpretation of United States treaties in Asia, for which he was specially thanked by the President of the United States. He also made special official visits to Japan, Korea and China, but resigned as Minister in 1898 to go as special correspondent to the Philippines during the Spanish-American War. Appointed delegate United States Second Pan-

American Conference, Mexico, 1901; Commissioner-General, Saint Louis Exposition, to foreign countries, 1902–03; United States Minister to Argentina, 1903–04; United States Minister to Panama, 1904–05; United States Minister to Colombia, 1906. In 1907 was elected by unanimous vote of 21 American governments Director-General of the Pan-American Union (q.v.), the official international organization maintained in Washington by the American republics for the development of commerce, friendship and peace. He was elected first honorary member American Asiatic Society, New York, was founder of Pan-American Society of the United States, and has been given special degrees by universities in the United States and Latin America for work in behalf of Pan-Americanism. Is author of 'Admiral George Dewey' (1899); 'Pan-American Union — Peace, Friendship, Commerce' (1911); 'Panama Canal' (1913), also of books on Asiatic and Latin American subjects.

**BARRETT, Lawrence,** American actor: b. Paterson, N. J., 4 April 1838; d. 21 March 1891. His first appearance on the stage was in 1853, in 'The French Spy.' In 1856 he appeared as Sir Thomas Clifford in 'The Hunchback' at Chambers Street Theatre, New York, and in 1857 he supported Burton, Charlotte Cushman, Edwin Booth and other eminent actors. He served as a captain in the 28th Massachusetts Infantry in the early part of the Civil War. Later he acted at Philadelphia, Washington, and at Winter Garden, in New York, where he was engaged by Mr. Booth to play Othello to his Iago. After this he became an associate manager of the Varieties Theatre in New Orleans, where for the first time he played the parts of Richelieu, Hamlet and Shylock. In 1864 he secured 'Rosedale' from Lester Wallack, and after appearing in its leading character at New Orleans, began his first tour as a star actor. In 1867 he played at Maguire's Opera House in San Francisco, and was then manager of the California Theatre till 1870. Late in 1870 he went with Mr. Booth, playing in alternate characters in Booth's Theatre. In 1871–72 he was manager of the New Varieties Theatre in New Orleans, and in December 1872 acted Cassius to Booth's Brutus in New York. During 1873–74 he made tours through the United States. In 1875 he appeared as Cassius in 'Julius Cæsar,' in Booth's Theatre, and later as King Lear. He was the first actor to appear as Daniel Druce in the United States in Mr. Gilbert's play. In 1882 he brought out 'Francesca da Rimini,' at the Chestnut Street Theatre in Philadelphia. In 1883 this play ran for nine weeks at the Star Theatre, in New York. In 1887 he began his first joint engagement with Edwin Booth in Buffalo. Mr. Barrett's last production of a new play was 'Guido Ferranti' by Oscar Wilde, brought out in 1890, at the Broadway Theatre, New York. His last appearance was on 18 March 1891, in the character of Adrian du Mauprat to the Richelieu of Mr. Booth. He wrote 'Life of Edwin Forrest.'

**BARRETT, Sir William Fletcher,** English scientist: b. Jamaica, West Indies, 10 Feb. 1844. He assisted Professor Tyndall at the Royal Institution, London, 1863–66, and was professor of experimental physics in the Royal College of Science, Dublin, 1873–1910. He was one of the founders of the Society for Psychical Research, and is widely known for his original researches in magnetism and radiant heat. He has published 'Lessons in Science' (1880); 'Early Chapters in Science' (1899); 'A Monograph on the So-called Divining Rod' (1897, 1900), etc. He was knighted in 1912.

**BARRETT, Wilson,** English dramatist and actor: b. Essex, 18 Feb. 1846; d. London, 22 July 1904. He went upon the stage in 1863. In 1874 he became manager of the Amphitheatre in Leeds, and later lessee of the Grand Theatre in Leeds; in 1879 manager of the Court Theatre, London; and in 1881, of Princess' Theatre, London. He visited the United States in 1886, and, returning to England in 1887, became manager of the Globe Theatre; revisited the United States in 1888, and again in 1889; in 1896 became manager of the Lyric Theatre, London; and in 1899, of the Lyceum. His dramas include 'The Sign of the Cross'; 'Pharaoh'; 'Now-a-days'; 'The Daughters of Babylon'; 'In Old New York,' etc.; and he adapted for stage purposes such well-known novels as 'The Deemster'; 'The Bondman'; 'The Manxman'; and 'Quo Vadis.'

**BARRHEAD,** Scotland, manufacturing town of Renfrewshire, seven miles southwest of Glasgow. The chief industries are the printing of cottons, the spinning of cotton yarn, dyeing, bleaching, iron and brass founding, and the making of machinery and sanitary appliances. Its engineering and other works combine with its railway facilities to make it a busy and thriving town. It was founded in 1773. Pop. (1911) 10,000.

**BARRIAS,** bą-rę-ąs, **Felix Joseph,** French painter: b. Paris, 13 Sept. 1822; d. 1907; a pupil of Leon Cogniet. His most successful works are 'Cincinnatus' (1844); 'Sappho' (1847); 'Death of Chopin' (1885) and his mural decorations in the Hotel du Louvre, the Grand Opera House, the churches of Saint Eustache and La Trinité, Paris, and at Grosvenor House, London. He was awarded the Grand Prix de Rome, 1844; Legion of Honor, 1859; first medal at the Paris Exposition, 1889.

**BARRICADE.** A hastily improvised obstruction intended to defend streets, bridges and other narrow passages, and to retard the enemy in his movements. Carriages, casks, chests, furniture, beams, chains, and, in short, everything which is at hand, is used for this purpose, either in defending a town against besiegers, or in suppressing popular tumults.

Barricades have been made use of in street-fights since the Middle Ages, but they are best known in connection with the insurrections in the city of Paris. As early as 1358 the streets of Paris were barricaded against the Dauphin, afterward Charles V. A more noteworthy barricade-fight was that in 1588, when 4,000 Swiss soldiers, marched into Paris by Henry III to overawe the Council of Sixteen, would have been utterly destroyed by the populace, firing from behind barricades, had the court not consented to negotiation; and the result was that the King fled next day.

The next barricade-fight of importance in Paris was that of 1830, which resulted in the

expulsion of the Bourbons from the throne of France, and the election of the citizen-King, Louis Philippe. During the three days which this revolution lasted, the number of barricades erected across the streets amounted to several thousands. They were formed of the most heterogeneous materials — overturned vehicles, trees, scaffolding-poles, planks, building-materials and street paving-stones; men, women and children taking part in their erection. In February 1848, the insurrection against Louis Philippe commenced with the erection of barricades; but the most celebrated and bloody barricade-fight was that between the populace and provisional government, which, commencing on the night of the 23 June 1848, lasted throughout the three following days, when the people had to surrender. The national losses by this fight were estimated at 30,000,000 francs; 16,000 persons were killed and wounded, and 8,000 taken prisoners. The Emperor Napoleon III so widened and macadamized the principal streets of Paris after he ascended the throne as to render the successful erection of barricades next to impossible. There was a remarkable barricade-erection in London in 1821. The ministry desired that the body of Queen Caroline should be conveyed out of the country to Germany, for interment, without the populace having the opportunity of making any demonstration. On the matter becoming known, a vast barricade was erected at the point where the Hampstead road joins the new road; and as nothing but the use of artillery could have forced the way, the officer in charge of the funeral cortége deemed it prudent to change his course and pass through a more central part of the metropolis. During the revolutions of 1848, barricades were successfully carried in Paris, Berlin, Vienna and other places, by abandoning the attack in front and breaking through the houses of contiguous streets, taking their defenders in the rear.

**BARRICADES, The Days of the,** a phrase employed to denote popular Parisian revolts.

**BARRIE, Sir James Matthew,** British novelist and dramatist: b. Kirriemuir, Scotland, 9 May 1860. He was graduated at Edinburgh University in 1882. His sketches and stories of country life in Scotland soon brought him to the attention of the British public and within a few years he was the recognized master in his field. He published 'Auld Licht Idylls' (1888); 'A Widow in Thrums' (1889); 'The Little White Bird' (1892); 'Sentimental Tommy' (1892). These four books assured the success attained earlier by his work in papers and periodicals and gained him a vast host of readers. He is unexcelled in his portrayal of Scottish peasant life, with its tricksy wit and overflowing with pathos and the author's poetic fantasy. Many others in like vein followed such as 'My Lady Nicotine' (1890); 'The Little Minister' (1891); 'Margaret Ogilvy' (1896); 'Tommy and Grizel' (1900); 'Peter Pan in Kensington Gardens' (1906); 'Peter and Wendy' (1911). In 1892 he won his first success in another field with his farce, 'Walker, London.' This was followed by many other plays, several of which were based on his work in fiction. These include 'The Professor's Love Story' (1895); 'The Little Minister' (1897); 'The Wedding Guest' (1900); 'Quality Street'; 'The Admirable Crichton' and 'Little Mary' (1903); 'Peter Pan' (1904); 'Alice-Sit-by-the-Fire' (1905); 'What Every Woman Knows' (1908); 'The Legend of Leonora'; 'The Will'; 'The Adored One' (1913); 'Half Hours' (1913); 'Der Tag' (1914); 'Rosy Rapture' (1915). His dramas are apart from the problem type of his day, dealing with the comedy of manners and the fantasy in which his humor, satire and engaging personality have given him a high place. He was made a baronet in 1913. A 10-volume edition of Barrie's 'Works' was issued in London in 1913. (See Little Minister, The.) Consult Hammerton, A. J., 'Barrie and his Books' (New York 1900), containing a list of articles on Barrie and his work. For bibliography of his work to 1903 consult *English Illustrated Magazine* (Vol. XXIX, New Series, p. 208).

**BARRIE,** Canada, town and county-seat of Simcoe County, Ontario, on the Grand Trunk Railway, at the western extremity of Lake Simcoe, 64 miles north-northwest of Toronto. Barrie was founded in 1832 and incorporated in 1871. It is a popular and beautiful summer resort, and the starting point of the Lake Simcoe steamers. The chief industrial establishments are planing and grist mills, carriage works, breweries, brick-yards, engine and boiler works, and wicker works. The waterworks and electric-light plant are owned by the corporation. In 1896 Allandale, a railway centre, was annexed to the town, and the Grand Trunk Railway has here a large roundhouse, machine shops, etc. A United States consular agent is stationed here. Pop. (1911) 6,420.

**BARRIER REEF, The Great,** a coral reef or line of reefs extending for 1,260 miles off the northeast coast of Australia, at a mean distance from land of 30 miles. It has a breadth varying from 10 to 90 miles, though little of it rests above water level. The channel separating it from the mainland rarely exceeds 250 feet in depth, but on its outer slope the reef rises precipitously from a great depth, no bottom having been found at some places with a line of 285 fathoms.

**BARRIER TREATY.** When, by the Peace of Utrecht in 1715, the Spanish Netherlands were ceded to Austria, this cession was agreed to by the Dutch, who had conquered these provinces in alliance with England, only on condition that they should have the right (in order to secure their borders and give them a barrier against their powerful neighbor, France) to garrison several fortresses of the country, and that Austria should engage to pay yearly to Holland $350,000 for the support of these garrisons. The treaty which was concluded between Austria, England and Holland was called the Barrier Treaty. In 1781 the Emperor Joseph II declared it void.

**BARRIERS, Battle of the,** an engagement between the French and the Allies in front of Paris, March 1814, in which the former were defeated. Its immediate result was the abdication of Napoleon.

**BARRILI,** bär-rē'lę, **Antonio Giulio,** Italian novelist: b. Savona, 14 Dec. 1836; d. 1909. Engaging in journalism at 18, he assumed the management of *Il Movimento* in 1860, and became proprietor and editor of *Il Caffaro* in

Genoa in 1872. He took part in the campaigns of 1859 and 1866 (with Garibaldi in Tyrol) and in the Roman expedition of 1867, and sat in the Chamber of Deputies in 1876–79. He was one of the most prolific writers of modern Italy, and among his numerous stories are 'Elm Tree and Ivy' (1868); 'The Vale of Olives' (1871); 'As in a Dream,' 'The Devil's Portrait' (1882); 'The Eleventh Commandment,' 'A Whimsical Wooing.' He has published several volumes of criticism, among which may be named 'Il Rinnovamento Litterario Italiano' (1890).

**BARRING-OUT,** a practice once common in some English schools and rendered familiar to many from forming the subject of one of the tales in Miss Edgeworth's 'Parent Assistant.' It generally took place a few days before the holidays, when the boys barred the doors of the school and defied the masters from the windows. It was commonly understood that the pupils might dictate terms as to holidays for the ensuing year if they could prevent the masters' entrance for three successive days. The origin of the practice is not known; but its observance is enjoined in the statutes of Witton School, Cheshire, founded in 1588, by Sir John Deane.

**BARRINGTON, Daines,** English lawyer, antiquary and naturalist: b. 1727; d. 14 March 1800. After preparatory studies at Oxford and the Inner Temple, he was called to the bar. He was successively appointed a Welsh judge (1757), recorder of Bristol (1764) and second justice of Chester (1778–85). His publications were numerous, but his name is now best known as a correspondent of White of Selborne, whose famous letters on natural history he is said to have suggested. He was an eager, curious antiquary, uncritical and the subject of many hoaxes.

**BARRINGTON, George,** Irishman, noted author and thief, whose real name was Waldron: b. 1755; d. about 1840. His most notable act of thieving was the robbing of a Russian prince in Covent Garden Theatre. He took from him a gold snuff-box said to be worth $150,000; but, as the prince refused to prosecute, he was dismissed from trial. In 1790 he was sentenced to seven years' penal servitude at Botany Bay; but having given information of an intended mutiny of the other convicts on the voyage, at the end of two years he was discharged, on the first warrant of emancipation ever issued. He was made superintendent of convicts, and later high constable at Paramatta. He was a wit, and of some literary genius: one couplet in a prologue he wrote for Young's play 'Revenge,' produced by the convicts on the opening of the Sydney Theatre, remains an enduring classic:

> "True patriots we; for be it understood,
> We left our country for our country's good."

He wrote also 'Voyage to Botany Bay' (1801); 'History of New South Wales' (1802); 'History of New Holland,' i.e., Australia (1808).

**BARRINGTON, John Shute,** English lawyer and theologian: b. London 1678; d. Becket, Berkshire, 14 Dec. 1734. From 1715 to 1723 he was a member of the House of Commons and was created first Viscount Barrington in 1720. He was a disciple and friend of Locke, a friendship which is thought to have been brought about by the publication of his (Barrington's) work, 'The Interests of England,' etc. He was devoted to theology and wrote extensively in that science. His chief works have been collected under the title 'The Theological Works of the First Viscount Barrington.'

**BARRIOS, bär'ṛē-ōs, Gerardo,** Central American statesman: b. about 1810; d. 1865. He became President of Salvador in 1860. During his administration, education, commerce and public works progressed remarkably, his presidential management being unusually liberal. He was deposed by Duenas as the outcome of the war with Guatemala, and, while endeavoring to bring about a revolution in order to become President again, was captured and executed.

**BARRIOS, Justo Rufino,** son of the foregoing, Guatemalan statesman, of Spanish-Indian blood: b. San Lorenzo, Guatemala, 17 July 1835; d. Chalchuapa, 2 April 1885. He was educated for the law, but the political punishment of his father led him to become a guerrilla revolutionist, and finally chief lieutenant of Garcia Granados, who by his help ousted Vicente Cerna (the decisive battle being fought 29 June 1871) and became President, Barrios being commander-in-chief. The revolution was a democratic and anti-clerical one, and the new government began by expelling the Jesuits; to which Barrios added the suppression of religious orders during an acting presidency, and after he had, on 4 June 1873, succeeded Granados as President. There had been incessant revolts of the reactionists, which shortly after his accession he quelled once for all, establishing a system of terrorism and espionage which at least gave the country quiet and enabled him to carry out his wonderful reforms and improvements. He maintained internal peace and supremacy in Central America by a thorough system of militia drill for all but the pure-blooded Indians; keeping an army of some 30,000 men in constant reserve, with 3,000 to 4,000 in the capital, which he made one of the best ordered cities of Spanish America. He organized the postal and telegraphic service on the reports of men sent to examine the United States systems. He built the first telegraph and the first railroad in Guatemala, and started a line to the coast, compelling every citizen earning over $8 a month to hold stock in it; constructed street railway lines in the capital; improved the roads and built solid bridges. He remodeled the educational system, established collegiate institutes, normal and industrial schools, and made knowledge of French and English a condition of license to practise law or medicine. He built two modern penitentiaries. In a word, he transformed Guatemala into one of the most habitable and progressive countries south of the United States. But the foremost purpose of his life was to form Central America into one united state, for power and prosperity and the ending of the miserable wars that wasted its vitality. On 15 Jan. 1876 he assembled a diet from all the states in Guatemala city to frame a plan of consolidation; but as it could not agree upon one, he therefore determined to set up governments in the other states favorable to his plans. Honduras was racked by a civil war and offered no difficulties, Salvador was too small to resist the

union of the two, and thenceforward till 1884 Barrios disposed of the resources of all three republics. On 1 March 1880, the first Constitution of Guatemala went into operation, and Barrios was re-elected for a six-year term. On 24 Feb. 1883 he issued a circular to the Liberal party, pledging himself to effect the unification only by peaceful means and with the consent of all the republics. In March 1884 he called a meeting of five delegates from each republic, but Costa Rica and Nicaragua still held back. Finally, on 28 Feb. 1885, he, with his assembly, issued a decree proclaiming the union of the five states, relying on Honduras and Salvador to help him put down resistance in the others. But the President of Salvador refused to employ force, and on Barrios persisting, joined Nicaragua and Costa Rica in a league to resist him, appealing to Mexico and the United States for help. President Diaz of Mexico remonstrated with Barrios, and the United States viewed the movement with disfavor; but on the Salvadorean troops, which expected Mexican help, invading Guatemala, Barrios drove them back into Salvador, and while entering Chalchuapa was struck down by a sharpshooter's bullet. His widow removed to New York, and his son became a cadet in the United States army.

**BARRISTER,** in England, an advocate or pleader, who has been admitted by one of the Inns of Court, namely, the Inner Temple, Middle Temple, Lincoln's Inn or Gray's Inn to plead at the bar. Before a student can be admitted to the bar he must have been a member of one of those societies and have kept 12 terms there by dining sufficiently often in the hall of the society to which he belongs, and must also pass a public examination. The examinations, which had dwindled into mere forms, have in recent years been made more stringent. Barristers are sometimes called utter or outer barristers, to distinguish them from queen's (or king's) counsel, who sit within the bar in the courts, and are distinguished by a silk gown. Barristers are also spoken of as counsel, as in the phrase "opinion of counsel," that is a written opinion obtained from a barrister before whom the facts of a case have been laid. The duties of a barrister are nominally honorary, and he can maintain no action for his fees. Yet there are few higher-paid professions than that of a successful barrister. It is the barristers who speak before all the higher courts, being instructed in regard to the facts of the case they have in hand by means of the brief which they receive from the solicitor engaging their services. In the United States there is no distinct order of counsel corresponding to the English barrister, the same person performing the duties of attorney, *solicitor,* counsel or advocate. See also ADVOCATE.

**BARRON, James,** American naval officer: b. Virginia 1769; d. 21 April 1851. He entered the navy in 1798, and commanded the *Chesapeake* in 1807, when it was attacked by the British ship *Leopard* as a result of his refusal to allow the *Chesapeake* to be searched for deserters. The *Chesapeake,* which was quite unprepared, discharged one gun previous to striking her colors. She was captured and three alleged deserters were found. Barron was court-martialed for neglect of duty, though only partially to blame for the surrender of his vessel, and suspended for five years. The court closed its finding on the subject of the personal conduct of the accused, in the following language: "No transposition of the specifications, or any other modification of the charges themselves, would alter the opinion of the court as to the firmness and courage of the accused; the evidence on this point is clear and satisfactory." Such was the fate of Commodore Barron, but it is more than probable that under the state of public feeling, demanding a victim, those who were really responsible for the inefficiency of the *Chesapeake* escaped unpunished. Upon his restoration, as the outcome of a long correspondence with his personal enemy, Commodore Decatur, a duel was fought and Decatur was killed. Barron became senior officer in the navy in 1839, though never again in active service and never regained full public esteem. See CHESAPEAKE AND LEOPARD.

**BARRON, Samuel,** American naval officer: b. Hampton, Va., 1763; d. 29 Oct. 1810. In 1805 he commanded a squadron of 10 vessels in the expedition against Tripoli. On his return to the United States he was appointed commandant of the Gosport navy yard, but died immediately afterward.

**BARROS,** bär-rōs, **Arana Diego,** Chilean scholar and historian: b. Santiago, 16 Aug. 1830. Ill-health obliging him to give up legal studies, he early devoted himself entirely to historical and literary pursuits, and soon became an authority on the history of his native country. The favor with which his historical sketch of the campaigns of 1818–21 was received encouraged him to begin an extensive 'History of Chilean Independence' (1854–58). He spent several years investigating the government archives and private libraries of South America and Europe in search of material bearing on the history of South America. In Simancas he discovered the manuscript of the 'Purén Indomito,' an historical poem on the Araucanian War, and published an edition of it at Leipzig in 1860. His chief works in addition to the above are 'Vida y viajes de Hernando de Magallanes' (1864); 'Histoire de la guerre du Pacifique' (1881), written by order of the government; and his monumental 'Historia general de Chile' (12 vols., 1884–93).

**BARROS, João de,** eminent Portuguese historian: b. Vizeu 1496; d. Pombal 1570. His first work, an historical romance, entitled the 'Emperor Clarimond,' appeared in 1520. Barros presented it to the King, who urged him to undertake the history of the Portuguese in India, which was issued 1552–62. King John III appointed Barros governor of the Portuguese settlements in Guinea, and afterward general agent for these colonies, in which capacities he proved a capable and clean administrator. In 1530 he presented Barros with the province of Maranham in Brazil for the purpose of colonization. Barros lost a great part of his fortune by the enterprise and returned the province to the King, who indemnified him for his losses. His work 'L'Azia Portugueza,' is much admired for its style, erudition and orderly arrangement; but he lacked the critical faculty necessary to place personalities and events in their true perspective. He wrote besides a

moral dialogue, 'Rhopicancuma,' in which he shows the pernicious consequences of accommodating principles to circumstances; but this work was prohibited by the Inquisition. He wrote also a dialogue on false modesty, and a Portuguese grammar, the first ever published.

**BARROSA, or BOROSA,** Spain, a village near the southwest coast of Andalusia, 16 miles southeast of Cadiz. On a knoll to the east of it a battle was fought in 1811, in which the British under General Graham, when abandoned by the Spaniards, defeated a superior French force under Victor.

**BARROT,** bą-rō, **Camille Hyacinthe Odilon,** French statesman: b. Villefort, Lozère, 19 July 1791; d. Bougival, near Paris, 6 Aug. 1873. At 19 he pleaded before the ordinary tribunals, and at 23, by a special dispensation, before the Court of Cassation, Paris, and early acquired a high reputation for eloquence. In the political arena his oratory soon made him one of the most influential leaders of the liberal opposition. He became president of the "Aide-toi" Society in 1830, and at the July revolution in that year was one of three commissioners appointed to conduct the dethroned Charles X to Cherbourg, on his way to England. Returning, he was appointed prefect of the department of the Seine and member of the Council of State, but in a few months resigned his offices to lead the opposition to Casimir Périer and the reactionary ministers who followed him. He supported Thiers from his accession to office in March 1840, to his fall in October, when he resumed his opposition to the ministry of Guizot. He took a conspicuous part in the reform movement of 1847, and spoke eloquently at several of the provincial reform banquets which led to the revolution of February 1848. Made president by Thiers in his short-lived ministry, he advised the King to withdraw his troops and thus remove the last obstacle to the downfall of his throne. In the last sitting of the Chamber of Deputies he supported the claim of the Comte de Paris to the throne and the regency of the Duchess of Orleans. The February revolution considerably abated his ardor for public liberty. He held office for some time under the presidency of Louis Napoleon, but retired from active political life after the *coup d'état,* 2 Dec. 1851, and accepted no office under the Second Empire. In July 1872 he was made a councillor of state and vice-president of the council, 6 Aug. 1873. His 'Mémoires Posthumes' appeared at Paris (1875–76).

**BARROW, or BARROWE, Henry,** English ecclesiastical reformer, often considered as one of the founders of Congregationalism: d. 1593. He was a member of Gray's Inn, London, in 1576 and there became interested in the writings of Thomas Browne, the founder of the Brownists. On account of his advocacy of church reform he was imprisoned and with his coreformer, Greenwood, was hanged at Tyburn. He was the author of 'Brief Discourse of the False Church' (1590). See Dexter, 'Congregationalism of the Last Three Hundred Years' (1880); 'Dictionary of National Biography' (London 1885—).

**BARROW, Isaac,** English mathematician and theologian: b. London 1630; d. May 1677. At the Charterhouse, where he was educated, he was chiefly remarkable for fighting and neglect of study, but being removed to a school at Felsted, in Essex, he began to show some earnest of his future great reputation. He was subsequently entered a pensioner of Trinity College, Cambridge, in 1643, of which he was chosen a scholar in 1647. Finding that opinions in church and state opposite to his own now prevailed, he proceeded some length in the study of anatomy, botany and chemistry, with a view to the medical profession. He, however, changed his mind, and to the study of divinity joined that of mathematics and astronomy. In 1652 he graduated M.A. at Oxford, and being disappointed in his endeavor to obtain the Greek professorship at Cambridge in 1654, engaged in a scheme of foreign travel. He set out in 1655, and during his absence his first work, an edition of Euclid's 'Elements,' was published at Cambridge. He visited France and Italy, where he embarked for Smyrna, and from Smyrna he proceeded to Constantinople, returning in 1659 by way of Germany and Holland, and was soon after ordained by Bishop Brownrigg. In 1660 he was elected Greek professor at the University of Cambridge; in 1662 professor of geometry in Gresham College; and in 1663 the Royal Society elected him a member of that body in the first choice after their incorporation. The same year he was appointed the first Lucasian professor of mathematics at Cambridge. In 1669, on a conscientious principle of duty, he determined to give up mathematics and adhere exclusively to divinity. Accordingly, after publishing his celebrated 'Lectiones Opticæ,' he resigned his chair to the great Newton. In 1673 the King nominated him to the membership of Trinity College, observing that he had bestowed it on the best scholar in England. He had before this refused a living, given him with a view to secure his services as a tutor to the son of the gentleman who had it to bestow, because he deemed such a contract simoniacal; and he now, with similar conscientiousness, had a clause in his patent of master allowing him to marry erased, because incompatible with the intentions of the founder. In 1675 he was chosen vice-chancellor of the University of Cambridge; but the credit and utility expected from his labors were frustrated by his untimely death.

The works of Barrow, both mathematical and theological, are of the highest class. Of the former the following are the principal: 'Euclidis Elementa' (1655); 'Euclidis Data' (1657); 'Lectiones Opticæ' (1669); 'Lectiones Geometricæ' (1676); 'Archimedis Opera' (1675); 'Apollonii Conicorum, lib. iv'; 'Theodosii Sphericorum, lib. iii, novo methodo illustrata et succincte demonstrata' (1675); 'Lectio in qua Theoremata Archimedis de Sphæra et Cylindro per Methodum Indivisibilium Investigata' (1678); 'Mathematicæ Lectiones' (1683). All his English works are theological; they were left in manuscript, and published by Dr. Tillotson (1685). 'Isaaci Barrow Opuscula' appeared in 1697. As a mathematician, especially in the higher geometry, Barrow was deemed inferior only to Newton; as a divine he was singularly distinguished for depth and copiousness of thought. A fine specimen of his characteristic copiousness is quoted by Addison from his sermon on 'Vain and Idle Talking,'

in which the various forms and guises of wit, —a faculty for which Dr. Barrow was himself celebrated,— are enumerated with a felicity of expression which it would be difficult to parallel.

**BARROW,** Sir **John,** eminent English traveler and geographer: b. near Ulverston, Lancashire, 1764; d. 23 Nov. 1848. When 14 years old he entered an iron foundry in Liverpool as timekeeper. Two years afterward he gave up this situation and made a voyage in a whaler to Greenland. He was subsequently employed as a teacher of mathematics in a school at Greenwich, and in that capacity attracted the attention of Sir George Staunton, who appointed him nominally comptroller of the household to Lord Macartney in his embassy to China in 1792, though his real employment was to take charge of the philosophical instruments carried out as presents to the Chinese Emperor. Of this journey he afterward published an account under the title of 'Travels in China' (1804). On Lord Macartney being appointed governor of the Cape of Good Hope in 1797, he made Mr. Barrow his private secretary; and on quitting the Cape in 1798 left him auditor-general of public accounts. During his residence there he made several journeys into the interior of south Africa, and on his return to England published an account of them under the title of 'Travels in Southern Africa.' in 1804 Barrow was appointed second secretary to the admiralty which post, with a brief interval, he occupied continuously for 40 years. The duties of this post he discharged with the most exemplary industry and activity, and he took an ardent interest in promoting geographical and scientific discovery, and more especially the expeditions to the Arctic Seas. His leisure hours were employed in literary work, and the numerous volumes published by him attest the profitable use he made of his time. These include, in addition to the books of travel already mentioned, the 'Life of Earl Macartney'; 'Life of Lord Anson'; 'Life of Lord Howe'; 'Voyages of Discovery and Research within the Arctic Regions'; Autobiographical Memoir' (1847). In 1835 he was created a baronet. He originated the Royal Geographical Society in 1830 and was its vice-president at the time of his death. Barrow Strait, Cape Barrow and Point Barrow, in the Arctic regions, were named in his honor.

**BARROW,** a navigable river of Ireland, province of Leinster. Its course is generally southward, and after about 900 miles it joins the Suir to form the estuary called Waterford Harbor. It is navigable for vessels of 200 tons to New Ross, 25 miles from the sea, and for barges to Athy in Kildare County, where it is joined by a branch of the Grand Canal.

**BARROW,** the name which was given to three prominent localities of the Arctic region, in honor of Sir John Barrow. (1) Point Barrow, on the north coast of Alaska, in lat. 71° 23′ N., and long. 156° 31′ W., long considered as the most northerly spot on the American mainland. (2) Cape Barrow, on the coast of Canada, or Coronation Gulf, is in lat. 68° N., long. 111° W. (3) Barrow Strait, the earliest of Parry's discoveries, leading to the west out of Lancaster Sound, which Parry's immediate predecessor, Captain, afterward Sir John, Ross, had pronounced to be landlocked in that direction. Besides its main course to Melville Sound, Barrow Strait throws off Prince Regent's Inlet to the south and Wellington Channel to the north. The passage averages about 50 miles in breadth, extending nearly along the parallel of 74° N., from 85° to 100° W.

**BARROW,** an artificial mound or tumulus of stones or earth, piled up over the remains of the dead. Such erections were frequently made in ancient times in our own land, and they are met with also in many other countries both in the Old and New World. In Scotland they are called cairns. When opened they are often found to contain stone cysts, calcined bones, etc. Burial in barrows, commencing amid the mists of remote antiquity, seems to have been practiced as late as the 8th century A.D. One of the finest barrows in the world is Silbury Hill, Wiltshire, near Marlborough. It is 170 feet in perpendicular height, 316 along the slope, and covers about five acres of ground. See also Mound Builders.

**BARROW-IN-FURNESS,** England, seaport, parliamentary and county borough, in the district of Furness, situated opposite to and including the island of Walney, Lancashire, 50 miles northwest of Liverpool. In the middle of the 19th century it was a fishing village with 300 inhabitants; in 1911 its population was 63,770. This extraordinary prosperity is due to the working of the rich mines of red hematite iron-ore which abound in the district, and to the extension of the railway to Barrow, by which its excellent natural position and capabilities of development as a seaport have been taken advantage of. There are now four docks completed, and the depth of water is sufficient to admit the largest ships at present afloat. Much timber is imported from the north of Europe and from Canada and Norway, large numbers of cattle are brought from Belfast, preserved provisions are brought from the United States, and an extensive trade is done in grain and flour. Iron-ore and pig-iron are largely shipped from the port. There is a large passenger traffic with the Isle of Man and Belfast. The chief industrial occupations are the manufacture of iron and Bessemer steel, ship-building, iron-founding, rolling stock, and the making of ropes, sails, bricks, and large jute works, paper-pulp works and salt works have been established. Barrow owes a great deal of its prosperity to the discovery of the Bessemer process of steel-making and to the fact that the hematite ores of the district are specially adapted to this process. Messrs. Vickers, Sons & Maxim, Limited, employ thousands of hands, and have built some of the largest merchant and war-vessels afloat. They also manufacture ordnance and armor plate. The town is laid out on a regular plan, mostly in rectangles, is substantially built and well drained and supplied with gas, water and electricity. It contains a free public library, workmen's institute and a town-hall, built at a cost of over £60,000. The Redistribution Act of 1885 erected it into a parliamentary borough, returning one member. The interesting ruins of Furness Abbey, which was founded in 1127, lie within two miles of the town. Consult Richardson, 'Furness, Past and Present' (1880).

**BARROWS, David Prescott,** American ethnologist and educator: b. Chicago, 27 June

1873. He was graduated at Pomona College, Claremont, Cal., in 1894, and later studied at the universities of California, Columbia and Chicago. He became superintendent of schools at Manila, P. I., in 1900, chief of the Bureau of Non-Christian Tribes 1901 and director of education in the Philippine Islands 1903–09. He was appointed professor of education and dean of the Graduate School of the University of California in 1910 and in the following year became professor of political science at that institution. He has published 'The Ethno-Botany of the Coahuila Indians' (1900); 'A History of the Philippines' (1903); 'A Decade of American Government in the Philippines' (1915); also reports on ethnology of the Philippines and six reports on the progress of education in the Philippines.

**BARROWS, Elijah Porter,** American clergyman and educator: b. Mansfield, Conn., 1807; d. 1888. He was professor of sacred literature in Western Reserve College, Ohio, 1837–52, and of Hebrew in Andover Theological Seminary, 1853–66. In 1872 he became professor of Hebrew at Oberlin College, Ohio. Besides many contributions to the 'Bibliotheca Sacra,' he published 'Companion to the Bible' (1867); 'Sacred Geography and Antiquities' (1872); 'Manners and Customs of the Jews' (1884).

**BARROWS, (Katharine) Isabel Hayes,** American editor and penologist: b. Irasburg, Vt., 17 April 1845; d. 25 Oct. 1913. She was graduated at the Adams Academy, Derry, N. H., in 1862, and afterward studied medicine in New York, where she received the degree of M.D. She also spent two years in study at Leipzig and Vienna. She was married to William Wilberforce Chapin in 1863. He died in 1865 and in 1867 she was married to Samuel June Barrows. She was employed as a stenographer by the Department of State at Washington, being the first woman to hold such a position. She edited for 20 years the 'Proceedings' of the National Conference of Charities and Corrections, and was for about 16 years assistant editor of the *Christian Register.* She was also phonographic secretary to the National Prison Association and to the Lake Mohonk conferences, to each of which she rendered invaluable services. She also contributed frequently to *The Independent, The Outlook, The Survey* and other periodicals. She published 'The Shaybacks in Camp,' with S. J. Barrows; 'A Sunny Life: The Biography of Samuel June Barrows' (1913).

**BARROWS, John Henry,** American educator: b. Medina, Mich., 11 July 1847; d. Oberlin, Ohio, 3 June 1902. He was graduated at Olivet College in 1867; subsequently studied in Yale College, Union and Andover Theological Seminaries and at Göttingen; was pastor of the First Presbyterian Church, in Chicago, for 14 years; organized and was president of the World's Parliament of Religions at the World's Columbian Exposition in Chicago in 1893. He delivered a course of lectures on Christianity in the principal universities in India, under the patronage of the University of Chicago, 1896–97, and became president of Oberlin College in 1898. He published 'The Gospels are True Histories' (1891); 'Life of Henry Ward Beecher' (1893); 'Christianity the World Religion'; 'The World Pilgrimage'; 'History of the Parliament of Religions' (1893); 'The Christian Conquest of Asia' (1899). Consult the biography by M. E. Barrows (New York 1905).

**BARROWS, Samuel June,** American clergyman and author: b. New York, 26 May 1845; d. 1909. After a varied early career he became private secretary to William H. Seward in 1867, went to Utah in 1870 with Chaplain Newman of the United States Senate, and reported the debate with the Mormons. He was graduated at Harvard Divinity School in 1875, and while an undergraduate accompanied as correspondent of the New York *Tribune* General Stanley's Yellowstone expedition in 1873, and General Custer's Black Hills expedition in 1874, taking part in the battle of the Big Horn. He was pastor of the First Unitarian Church, Dorchester, Mass., 1876–81; editor of the *Christian Register* (1881–97); secretary of the United States delegation to the International Prison Congress, Paris, 1895, and United States representative on the International Prison Commission, 1896. In 1897 he was elected to Congress from the 10th Massachusetts district. He wrote 'The Doom of the Majority of Mankind' (1883); 'The Shaybacks in Camp,' in collaboration with Isabel H. Barrows (1887); 'A Baptist Meeting House' (1885); 'Isles and Shrines of Greece' (1898).

**BARRUNDIA,** bär-roon'dē-ą, **José Francisco,** Central American statesman: b. Guatemala 1779; d. New York, 4 Aug. 1854. He was sentenced to death for treason in 1813, but escaped, and became leader of the Revolutionary party in 1819. In 1823–24, as a member of the Constitutional Convention of Central America, he brought forward the decree for the abolition of slavery. He became President of the Central American republic in 1829, retaining office for over a year, and in 1852 was again elected President. He came to the United States in 1854, as Minister from Honduras, to propose the annexation of that territory to the United States, but died suddenly before anything was accomplished.

**BARRY, Alfred,** English prelate: b. London, 15 Jan. 1826; d. 1 April 1910. He was a son of the architect Sir Charles Barry, and was educated at Cambridge. He was headmaster of Leeds grammar-school, 1854–62; principal of Cheltenham College, 1862–68, and of King's College, London, 1868–83. He was canon of Worcester, 1871–81, of Westminster 1881–84. He became bishop of Sydney and primate of Australia in 1884, but resigned his see in 1889 and returning to England was rector of Saint James, Piccadilly, London, 1895–1900, and canon of Saint George's, Windsor, 1901–10. He has published 'Introduction to the Old Testament' (1856); 'Life of Sir C. Barry' (1867); 'Boyle Lectures' (1876–78); 'Christianity and Socialism' (1890); 'England's Mission to India' (1895); 'Hulsean Lectures' (1895); 'Do We Believe?' (1908). He was a brother of Sir John Wolfe-Barry.

**BARRY, Sir Charles,** distinguished English architect: b. London, 23 May 1795; d. 12 May 1860. At a very early age he displayed a taste for drawing and design, and while a youth exhibited at the Royal Academy. Having resolved to devote his energies to architecture, he employed the little means left him in

visiting Italy, Greece and the East. He left England in 1817, and remained abroad upward of three years. After his return he entered on his professional career. He executed numerous important buildings, such as the Travelers' and Reform Club-houses, London; King Edward's School, Birmingham, etc.; and in 1836 was appointed architect of the new Houses of Parliament at Westminster. On this building his fame as an architect rests, and with its execution he was employed almost unintermittently to the day of his death, extending over a period of more than 24 years. In 1852 he received the honor of knighthood. He had been admitted a Royal Academician in 1841. As an architect he belonged to the eclectic school, and adopted indifferently the Gothic or classic styles according as he might be required or circumstances rendered it expedient. Consult his 'Life and Works,' by his son.

**BARRY, Edward Middleton,** English architect, third son of Sir Charles Barry (q.v.): b. 1830; d. 1880. He had already distinguished himself in his profession, and succeeding to his father's business, completed his great work, the Houses of Parliament. He designed a large number of buildings, many of them of national importance, such as the Covent Garden Theatre, the opera house at Malta and the New National Gallery in London. He was elected a Royal Academician in 1869, and in 1873 succeeded Sir G. G. Scott as professor of architecture in the Academy.

**BARRY, Elizabeth,** English actress: b. 1658; d. London, 7 Nov. 1713. She was said to be the daughter of Colonel Barry, a prominent royalist in the civil war. She made her debut on the stage under the patronage of the Earl of Rochester; and her first performance is said to have been witnessed by Charles II and the Duke and Duchess of York. Her reputation was won chiefly in the line of tragedy, in the rôles of Monimia in 'The Orphan' and Belvidera in 'Venice Preserved.' She was known as "the great Mrs. Barry"; and is said to have created over 100 rôles. Consult Galt, 'Lives of the Players' (1831); and Baker, 'English Actors from Shakespeare to Macready' (1879).

**BARRY, James,** Irish painter and writer on his art: b. Cork, 11 Oct. 1741; d. 22 Feb. 1806. By one of his first paintings in oil, 'The Conversion of Saint Patrick,' exhibited at Dublin, he attracted the attention of Burke, who carried him, in his 23d year, to London. The brothers Burke provided him with the means for visiting Paris and Rome, whence he went to Florence, Bologna and Naples. He remained about four years in Italy, returning in 1770. Having exhibited some important pictures he was elected an associate of the Royal Academy in 1772 and a full academician the following year. In 1777–83 he executed his chief work, the six paintings illustrating the development of 'Human Culture' which adorn the great hall of the Society of Arts. In 1775 he published 'An Inquiry into the Real or Imaginary Obstructions to the Increase of the Arts in England.' He was appointed professor of painting in the Academy in 1782; but in 1799, after he had alienated the respect of his fellow-academicians by his peculiar manners and by his savage attacks upon them, he was expelled on the occasion of a violent pamphlet issued by him under the title of a 'Letter to the Society of Dilettanti.' He was distinguished more by vigor of conception than by accuracy of execution and his paintings have not maintained their reputation.

**BARRY, John,** the first American commodore: b. Wexford, Ireland, 1745; d. Philadelphia, 13 Sept. 1803. He early displayed a great partiality for the sea and at the age of 11 adopted America as his home and made a number of voyages in merchant ships until the commencement of the Revolution. He at once embraced the cause of the colonies, offered his services and was one of the first officers commissioned by Congress in the naval service. After a successful cruise in the *Lexington,* he was transferred, in the latter part of 1776, to the *Effingham,* one of three large frigates built in Philadelphia. When the American vessels of war were lying near Whitehill, whither they had been sent when the city and the forts of the river had fallen into the power of the British, Commodore Barry conceived the daring plan of annoying the enemy by means of small boats, properly armed, which being stationed down the river and bay might intercept supplies and in case of danger take refuge in the creeks. He accordingly manned the boats of the frigates, descended the river with muffled oars under cover of the night and appeared unexpectedly before the city. He effected his object by intercepting a large stock of provisions and capturing several vessels laden with military munitions and valuable stores for the British officers. He was afterward transferred to the *Alliance,* a frigate of 36 guns, which was placed under his orders. The *Alliance* sailed from Boston 25 Dec. 1781 with the Marquis de la Fayette and Count de Noailles on board, who were proceeding to France on public business. During the rest of the war Barry served with credit to himself and benefit to his country and after the cessation of hostilities was appointed to superintend the building of the frigate *United States* in Philadelphia, which was designed for his command. He retained the command of the *United States* until she was laid up in ordinary.

**BARRY, John Arthur,** Australian journalist and novelist: b. Torquay, Devon, England, 1850; d. 23 Sept. 1911. He entered the British merchant service at the age of 14; was in the Australian gold fields in 1870 and later became a stock drover in Queensland and New South Wales. From 1877 to 1880 he returned to seafaring life; after which he began to write for Australian, English, and American magazines and newspapers while he carried on the business of stock drover and manager. In 1896 he joined the staff in Sydney of the *Town and Country Journal,* which he left in 1900 to become editorial writer on the *Evening News.* Among his published works are 'Steve Brown's Bunyip' (1893); 'In the Great Deep' (1895); 'The Luck of the Native Born' (1898); 'A Son of the Sea' (1899); 'Against the Tides of Fate' (1899); 'Red Lion and Blue Star' (1902); 'Old and New Sydney' (1903); and 'Sea Yarns' (1910).

**BARRY, John Daniel,** American journalist and author: b. Boston, 31 Dec. 1866. He was graduated at Harvard University in 1888. Since

graduation he has devoted himself to journalism, writing novels and plays and lecturing on social and literary subjects. He was for a time dramatic critic for *Harper's Weekly* and later for *Collier's*. He was appointed instructor in diction and interpretation at the American Academy of Dramatic Arts and lecturer for the New York city Board of Education. He has written a daily essay for the San Francisco *Bulletin* since 1910. His published works include 'The Princess Margaret,' 'The Intriguers,' 'Mademoiselle Blanche,' 'A Daughter of Thespis,' 'The Congressman's Wife' (1903); 'Our Best Society' (1905); 'Intimations,' essays; 'Outlands,' a volume of short stories (1914); 'The City of Domes,' an illustrated description of the Panama-Pacific Exposition (1915); 'Reactions,' a volume of essays (1915).

**BARRY, Sir John Wolfe-Wolfe,** English engineer of eminence, youngest son of Sir Charles Barry: b. London, 7 Dec. 1836. He built the present Blackfriars Bridge in London, the Tower Bridge, the Barry Dock at Cardiff, Immingham Dock, New Alexandria Docks, Newport, Natal Harbor, and planned the railway in Argentina from Buenos Aires to San Rosario. He has published 'Railway Appliances' (1876); 'Lectures on Railways and Locomotives' (1862); 'The Tower Bridge' (1894); 'Barry Genealogy in England and Wales.'

**BARRY, Martin,** English physiologist: b. Fratton, Hampshire, 1802; d. Beccles, Suffolk, April 1855. He studied at the medical schools of London and at several on the Continent and took his degree of M.D. in Edinburgh in 1833. He wrote much on physiological subjects and especially on animal development and embryology. In 1843 he made the discovery of the presence of spermatazoa within the ovum, which he communicated to the Royal Society. His means being ample, he gave his professional services largely to the poor.

**BARRY, Spranger,** Irish actor, the great rival of Garrick: b. Dublin 1719; d. London, 10 Jan. 1777. He was brought up as a silversmith; but was attracted to the stage. He first appeared (1744) at the Theatre Royal, Smock alley, Dublin; and in 1746 was engaged at Drury Lane, London, as alternate to Garrick in 'Hamlet' and 'Macbeth.' Having aroused Garrick's jealousy by his success as Romeo, he was engaged (1750) at Covent Garden, where his supremacy in 'Romeo and Juliet' was generally conceded. He spent 1754–66 trying to found a theatre at Dublin. In 1767 he reappeared at London in the part of Othello. From 1774 till his death he acted at Covent Garden. Consult Pollock, 'Actors and Actresses of Great Britain' (1886).

**BARRY, Thomas Henry,** American soldier: b. New York, 13 Oct. 1855. He was graduated at West Point, 1877, and passed through the various grades of the service to his appointment as brigadier-general, United States volunteers, 18 June 1900. From August 1898 to February 1900 he was adjutant-general of the 8th army corps in the Philippines and became chief of staff, division of the Philippines, 1900–01; brigadier-general, 1903; major-general, 1908; commanded in Cuba, 1907–09; and 1910–12 was superintendent of the United States Military Academy.

**BARRY, William Farquhar,** American military officer: b. New York, 18 Aug. 1818; d. 18 July 1879. He first saw active service in the Florida War (1852–53) and in the Mexican War acted as aide-de-camp to General Worth. At the outbreak of the Civil War he was made chief of artillery and organized the artillery of the Army of the Potomac. He subsequently became chief of artillery to Sherman and took part in the march to the sea. In 1865 he was brevetted major-general. In 1867 he had charge of the Artillery School at Fort Monroe. He was part author with J. G. Barnard of 'Engineer and Artillery Operations of the Army of the Potomac, 1861–62,' and of 'Tactics for the Field Artillery of the United States.'

**BARRY, William Francis,** English Catholic clergyman and author: b. London, 21 April 1849. From Oscott he passed to the English College at Rome, where he had Cardinals Franzelin and Tarquini for masters in divinity. He was ordained in Rome, where he witnessed the sittings of the Vatican Council and the entry of the Italian troops by the Porta Pia. A vice-presidency of Birmingham Seminary was followed by his appointment to the chair of divinity at Oscott; later he was engaged in mission work at Wolverhampton and his subsequent charge at Dorchester gave him such leisure for literary labors as freed him from giving up to a parish talents that were meant for mankind. Dr. Barry has lectured in America and at the Royal Institution and was the deliverer of the centenary address on Edmund Burke, both in Dublin and London, in 1897. His first novel, 'The New Antigone,' was published anonymously in 1887 and its success has since been repeated by 'The Place of Dreams'; 'The Two Standards'; and 'Arden Massiter.' He contributed 'A History of the Papal Monarchy' to the 'Stories of the Nations' series, and has written studies of Newman and Renan. In 'Heralds of Revolt' he has collected some of his essays; while his 'Tradition of Scripture' and other works have been translated into various languages. He is, perhaps, the most brilliant *Quarterly* reviewer and *Dublin* reviewer of his generation. In 1907 he became canon of Birmingham and is now rector of Saint Peter's, Leamington.

**BARRY, William Taylor,** American statesman: b. Lunenburg, Va., 5 Feb. 1784; d. Liverpool, England, 30 Aug. 1835. He was graduated at William and Mary College (1803), and was soon after admitted to the bar. In 1810 he became a member of Congress from Kentucky. He served in the War of 1812; and from 1814–16 was United States senator from Kentucky. In 1828 he was appointed Postmaster-General under Jackson; and was on his way abroad as Minister to Spain at the time of his death. He was the first Postmaster-General who had a seat in the Cabinet.

**BARRY,** an urban district and seaport of south Wales, county of Glamorgan, on the British Channel, eight miles southwest of Cardiff. It has been practically brought into ex-

istence by the construction (1884–89) of a dock of 70 acres area here, between Barry Island and the mainland, at a cost of about £850,000, the entrance being between two breakwaters respectively 2,600 and 700 feet in length. Barry possesses churches and chapels, market-hall, public-hall, seamen's institute, etc., and carries on a large export trade in coal. As a municipality it is markedly progressive. Pop. (1911) 33,763.

**BARRY CORNWALL.** See PROCTOR, BRYAN WALLER.

**BARRY LYNDON, The Memoirs of.** 'Barry Lyndon,' which began in the January number, 1844, of *Fraser's*, is perhaps the most important of the works of Thackeray before the publication of the great masterpieces beginning with 'Vanity Fair,' in 1847, which brought Thackeray his great renown. The theme of 'Barry Lyndon' is the adventures of a thorough scoundrel and blackguard, who readily adapts himself to a life of courtly and variegated rascality and finally ends in destitution. In this respect it belongs to the class of which Fielding's 'Jonathan Wild' is one of the best examples. Barry Lyndon, as the title implies, tells his own story and in whatever situation, whether breaking his wife's heart, gambling on a large or small scale, or engaging in any of his countless villainies, is always treating himself as if he were a gentleman and as if whatever he were doing were in the highest degree "genteel." The character is thoroughly well-sustained, from this point of view, throughout the large variety of adventures. In workmanship the novel, though comparatively short, is regarded as one of the most consistent and pointed stories that Thackeray ever wrote. Thackeray's chief motive is largely satirical. He probably had in mind certain stories, like 'Eugene Aram' and 'Paul Clifford' of Bulwer-Lytton, which, according to Thackeray's view, held up as heroic types really detestable characters. Barry is one of these pseudo-heroes far more villainous than most. Trollope's 'Life of Thackeray' (in the 'English Men of Letters Series') gives a good short account of 'Barry Lyndon' among Thackeray's works.

WILLIAM T. BREWSTER.

**BARRYMORE, Ethel** (MRS. RUSSELL GRISWOLD COLT), American actress: b. Philadelphia, 15 Aug. 1879. She was educated at the Convent of Notre Dame, Philadelphia. She made her début in John Drew's company in 1896. She came into general notice in Clyde Fitch's 'Captain Jinks' in 1900, played Priscilla in 'Secret Service,' London, where she appeared also in 'Cynthia' in 1904. She starred in 'A Doll's House' in 1905, and in Barrie's 'Alice-Sit-by-the-Fire' (1906), played Mrs. Jones in 'The Silver Box' in 1907, Zoë Blundell in 'Mid-Channel' in 1910, and Stella Ballantyne in 'The Witness for the Defense' in 1911. In 1912 she appeared in Barrie's 'The Twelve-Pound Look,' and in Chambers' 'Tante' in 1913.

**BARRYMORE, Maurice** (HERBERT BLYTHE), American actor: b. India 1847; d. Amityville, L. I., 25 March 1905. He was educated at Cambridge. Having gone upon the stage he came to America and made his first appearance in 1875. Since then he has been most of the time in this country, acting as leading man with Modjeska, Mrs. Langtry, Mrs. Bernard Beere and Olga Nethersole. He has also written several plays, among them 'Nadjeska.'

**BARSABAS,** the son of Alpheus, brother of James the Less and of Jude, and one of the candidates nominated for the apostolical office left vacant by the treachery and suicide of Judas. According to tradition he was afterward appointed bishop of Eleutheropolis, a town of Palestine, about 20 miles from Jerusalem, and suffered martyrdom. Another Barsabas, surnamed Judas, and supposed to be the brother of the above, is mentioned in the Acts as one of the companions of Paul and Barnabas when they went to preach the gospel at Antioch. He is supposed to have returned to Jerusalem, and died at a very advanced age.

**BARSUMA,** or **BARSUMAS,** Nestorian bishop who flourished in the 5th century. He became bishop of Nisibis and metropolitan in 435. He established a theological school which sent out many missionaries, and is regarded as the founder of the Nestorian faith in Persia and eastern Asia.

**BARTAS,** bär-ta, **Guillaume de Salluste du,** French soldier, diplomatist, and man of letters: b. Montfort 1544; d. 1590 of wounds received at the battle of Ivry. His chief poem, 'The Divine Week,' gives an account of the creation, and is said to have had considerable influence on Milton's 'Paradise Lost.' Thirty editions of the work passed through the press in six years. Joshua Sylvester (1563–1618) translated into English 'Du Bartas, His Divine Weeks and Works' (1598). Mrs. Anne Bradstreet, the earliest American woman of letters, was an ardent admirer of his strained pedantic style and modeled her own verse upon it.

**BARTENSTEIN,** bar'tėn-stīn, **Treaty of,** a treaty between Prussia and Russia against France, concluded at Bartenstein, Prussia, 26 April 1807, soon after the battle of Eylau. The objects of the alliance were to re-establish Prussia within the limits of 1805; to dissolve the Rhine Confederation; to restore Tyrol and Venice to Austria; to secure the co-operation of England and Sweden; to aggrandize Hanover at the expense of France; to restore the House of Orange; and to obtain from France indemnities to the kings of Sardinia and Naples. The terms of this alliance are chiefly important for their similarity to the terms offered Napoleon at Prague (1813). The town of Bartenstein is situated in east Prussia, on the Alle, 35 miles south of Königsberg. There are manufactures of stoves and wagons, machine shops, iron foundries, breweries and saw mills, and considerable trade in grain. Pop. (1910) 7,343.

**BARTER,** a term used in commerce and political economy to express the exchange of one commodity for another, as contrasted with the sale of commodities for money. It is simply a primitive form of exchange carried on in countries in which the use of money has not yet been introduced, or is not prevalent. It was an economic stage through which all communities must have passed. Even yet in many rude countries barter is very common; and European travelers find it convenient to take with them weapons, tools and ornaments to exchange with the natives for their commodities. In civ-

ilized communities barter is a very exceptional thing, having been superseded by the use of money in various forms.

In law, barter, or exchange, as it is now more generally called in law books, is a contract for transferring property, the consideration being some other commodity; or it may be described as a contract for the exchange of two subjects or commodities. It thus differs from sale, which is a contract for the transference of property in consideration of a price in money. See also SALE.

**BARTFELD**, bärt'fĕlt, Hungary, a town 156 miles northeast of Budapest, on a rising ground near the banks of the Tepla and Lauka. It is one of the oldest towns in Hungary, and is well built; has several Roman Catholic churches, a Lutheran church and school, a Franciscan monastery, military academy, hospital, theatre, paper-mills, potteries, etc. Some acidulous chalybeate springs and baths, near the town, are much frequented. The trade in wine, hemp, linen cloth and woolen yarn is considerable. Pop. 6,000, mostly Slovaks.

**BARTH, Heinrich,** distinguished geographer and African traveler: b. Hamburg, 16 Feb. 1821; d. 25 Nov. 1865. He received his education partly in his native town and partly at the University of Berlin, and having determined to explore all the countries bordering on the Mediterranean, set out with this intention in the beginning of 1845. After his return in the end of 1847 he wrote an account of his travels, which he published with the title 'Wanderungen durch die Küstenländer des Mittelmeeres' (Berlin 1849). In less than two years after his return from his first travels he was invited by the English government to join Dr. Overweg in accompanying the expedition that was about to proceed under James Richardson to central Africa. The expedition having landed at Tripoli in the end of 1849, set out thence for the interior of Africa in February 1850. His explorations, which extended over an area of about 2,000,000 square miles, from Tripoli in the north to Adamawa in the south, and from Baghirmi in the east to Timbuctoo in the west, an area hitherto almost entirely unknown, were continued for more than five years, in spite of the death both of Richardson and Overweg, and he did not return to Tripoli till the autumn of 1855. The chief geographical results of these travels consist in the light they throw on the true nature of the Desert of Sahara, in showing that the eastern upper branch of the Niger, the Benuwe, is not connected with Lake Chad, and in the determination of the course of the Niger between Say and Timbuctoo. The result of these travels, entitled 'Travels and Discoveries in North and Central Africa,' was published in English (1857–58). Immediately after its publication he set out upon a new series of travels through Greece, Turkey, Asia Minor and other countries bordering on the Mediterranean, the last of which occupied the summer of 1865. Besides the works mentioned, he published 'Sammlung und Verarbeitung Central-afrikanischer Vokabularien' (1862–66); 'Reise von Trapezunt durch die nördliche Hälfte Kleinasiens nach Scutari' (1860); 'Reise quer durch das Innere der Europäischen Türkei' (1864).

**BARTH,** or **BART, Jean,** French seaman: b. Dunkirk, 20 Oct. 1651; d. there, 27 April 1702. He was the son of a fisherman, and at an early age evinced a love of adventure, which led him to follow the sea. He entered the Dutch navy, but on the outbreak of the war between France and Holland, 1672, he entered the service of France, and commanded a privateer. In this position opportunities soon occurred for distinguishing himself, and his name became known to Louis XIV, who commissioned him to cruise in the Mediterranean. His bravery soon raised him in the favor of the King, and he was appointed captain of the squadron in 1697. On one occasion, a famine existing in France, Barth recaptured from the Dutch 100 sail of vessels, loaded with grain. At another time when Dunkirk was blockaded, taking advantage of a fog, he sailed through the English and Dutch fleets and destroyed 86 merchantmen; then making a descent near Newcastle, Northumberland, he destroyed 200 houses, and returned safely with property valued at 500,000 crowns. He was on one occasion made prisoner by a superior English force, and taken to Plymouth, but succeeded in escaping in a fishing boat. Barth was rough in manners, and entirely uneducated; indeed, he could with difficulty scrawl his own name; but he was as simple-minded and honest as he was brave. A statue to his memory, by David d'Angers, was erected at Dunkirk in 1845. See Badin, 'Jean Bart' (1867); Landelle, 'Jean Bart et son fils' (1874).

**BARTH, Paul,** German sociologist: b. Baruthe, Silesia, 1 Aug. 1858. He is a professor in the University of Leipzig and in addition to his much-valued 'Philosophie der Geschichte als Sociologie,' the first volume of which was published in 1897, is the author of 'Geschichtsphilosophie Hegels und die Hegelianer bis auf Marx und Hartmann' (1890); 'Beweggründe des sittlichen Handelns' (1899); 'Tiberius Gracchus' (2d ed., 1893); 'Erziehungs- und Unterrichtslehre' (1906); 'Geschichte der Erziehung in Sociologischer und geistesgeschichtlicher Beleuchtung' (1911).

**BARTH, Theodor,** German journalist and politician: b. Duderstadt 1844; d. 1909. He studied law at the universities of Heidelberg, Leipzig and Berlin, and in 1871 established his practice at Bremen. He was a magistrate in Bremerhaven for four years and afterward until 1883 was secretary of the Chamber of Commerce in that city. He was elected to the Reichstag as Liberal Unionist member from Gotha in 1881 and later represented other districts until 1898. He founded *Die Nation* in Berlin in 1883 and remained its editor until it ceased publication in 1907. He was an advocate of free trade and opposed the protectionist policy of Bismarck and the Junkers. In 1898 he joined the Deutschfreisinnig party and became a member of the Landtag. He was again in the Reichstag in 1901–03, and was again an opponent of the reactionists in German politics. He visited the United States in 1907. He published 'Gegen den Staats-sozialismus' (1884); 'Amerikanisches Wirtschaftsleben' (1887); 'Amerikanische Eindrücke' (1896).

**BARTH,** Germany, a seaport in the province of Pomerania, Prussia, northwest of Stralsund. Its chief industries are shipbuilding, fish curing and packing, beer brewing, and sugar,

leather and cigar manufactories. There are also iron foundries, machine works and saw mills. It has a fine harbor and contains a school of navigation and a home for spinsters of high rank, and it has also a good trade in grain and wool. Its church dates from the 13th century.

**BARTHEL, Melchior,** German sculptor: b. Dresden 1625; d. 1672. He studied under his father and under Johann Boehme. He spent many years in Italy, including 17 in Venice, and on his return to Dresden was made court sculptor. His chief works are the tomb of the Doge, Giovanni Pesaro in Santa Maria dei Frari, Venice; the statue of John the Baptist in the Oratory of Santa Maria, Nazareth, and a tomb in the church of SS. Giovanni e Paolo, Venice. There are numerous ivory carvings by him in the Green Vault at Dresden, which are regarded as superior to his larger works.

**BARTHÉLEMY,** bär-tā-l'-me, **Auguste Marseille,** French poet and politician: b. Marseilles 1796; d. there, 23 Aug. 1867. Educated at the Jesuit College of Juilly, he went to Paris in 1822, and soon made himself famous by a series of vigorous and pointed political satires in verse, directed against the Bourbons, and full of suggestive regrets for the glories of the empire. In 'Napoleon in Egypt' (1828), and still more in his elegy for Napoleon's son, 'The Son of the Man' (1829), he spoke out his imperialism more boldly, and the publication of the latter poem occasioned his imprisonment on the eve of the revolution of July. His liberation was, of course, immediate; and with his friend Méry, he celebrated the victory of the people in a poem dedicated to the Parisians, entitled 'The Insurrection.' During all the changes which followed, Barthélemy was indefatigable as a brilliant versifier on the political events of the day; though in his later years his popularity somewhat declined. He was from the first a warm supporter of the second Napoleonic régime. Some of his sayings are memorable, as the oft-quoted "L'homme absurde est celui qui ne change jamais." He died in Marseilles, of which city he was librarian.

**BARTHÉLEMY, François, Marquis de,** French diplomatist: b. Aubagne (Provence), 20 Oct. 1747; d. Paris, 3 April 1830. He was brought up by his uncle, the author of 'Anacharsis'; and the protection of the Duke of Choiseul established him in diplomacy. The Revolution did not hinder his success in life; in 1793 he was Minister plenipotentiary to Switzerland. He successively negotiated the Peace of Basel with Prussia, Spain and the Elector of Hesse, the first treaties concluded by the French republic. This won for him an enviable reputation; but he was especially popular among the *Clichyen* or Royalist party, by which he was, in 1797, elected member of the Directory; consequently on the Republican *coup d'état* of the 18th Fructidor he was ejected from the government, arrested and transported with Pichegru and Ramel to Guiana, whence he escaped to the United States. Shortly afterward he was in England, and after the 18th Brumaire was recalled by the First Consul, who made him a senator. On the establishment of the empire he received the title of count and showed great devotion to Napoleon during the course of his prosperity, but as soon as misfortune threatened Barthélemy sided at once with his enemies. He was made Minister of State and a marquis by Louis XVIII, and in 1819 proposed the restriction of the electoral franchise. Consult his 'Papiers' (ed. by Kaulek, 4 vols., Paris 1886–88).

**BARTHÉLEMY, Jean Jacques,** French antiquarian: b. Cassis, near Marseilles, 20 Jan. 1716; d. 30 April 1795. He received a good education from the fathers of the oratory at Marseilles, and was about to prepare himself, under the Jesuits, for holy orders, but becoming disgusted with his teachers declined all offers of clerical promotion, and only accepted the title of *abbé* in order to show that he belonged to this class. He became deeply interested in the study of Oriental languages and antiquities, and his indefatigable industry and acuteness soon enabled him to communicate to the learned new discoveries in this Oriental study, among which the 'Alphabet of Palmyra,' published 1754, holds a principal place. In 1747 he was chosen member of the Academy of Inscriptions at Paris. About this time he became acquainted with the Count Stainville (afterward the minister Choiseul), who was on the point of departing as Ambassador for Rome, and who invited Barthélemy to accompany him. Having been appointed director of the Cabinet of Medals in 1753, he accepted the offer and went, in 1754, to Rome. He traveled through Italy, collected antiquities, and occupied himself after his return with learned works and with the arrangement of the cabinet which had been entrusted to his care, and to which he added a great number of costly and rare medals. Among his works none are so distinguished for learning and beauty of description as the 'Travels of the Younger Anacharsis in Greece,' on which he had labored 30 years, and which was translated into English, German and other languages. He himself was modest enough to call this an unwieldy compilation, but all the learned men of France and foreign countries received it with the greatest enthusiasm. Barthélemy in his advanced age resolved to compose a complete catalogue of the Royal Cabinet of Medals, but was interrupted in 1788 by the storms of the Revolution. In 1789 he received a place in the Académie Française. In 1793 he was arrested on a charge of aristocratic leanings, but was soon after set at liberty. When the chief librarian of the National Library, the notorious Carra, was executed, 31 Oct. 1793, Barthélemy received the offer of his place but declined it.

**BARTHÉLEMY-SAINT-HILAIRE, Jules,** French politician and philosopher: b. Paris, 19 Aug. 1805; d. there, 24 Nov. 1895. On completing his studies he received an appointment in the Ministry of Finance, being at that time also on the staff of *Le Globe* newspaper. After the revolution of 1830 he founded a journal called *Bon Sens,* and continued to support the Liberal party in the press. In 1834 he became examiner in French literature at the École Polytechnique, and four years later he was appointed to the chair of Greek and Latin philosophy in the Collège de France. He played a part on the side of the Moderate party in the revolution of 1848, and was elected to the Constituent Assembly for Seine-et-Oise. The *coup d'état* of December 1852 caused him to forsake political life for a considerable time and to resign his professorship. From this retirement he emerged in 1869, the year of his

election as deputy for the first circumscription of Seine-et-Oise. He was shortly afterward sent to the National Assembly as the representative of that department, and during the disastrous times of 1870–71 he was closely associated with M. Thiers. In 1875 he became a life senator, and in the Cabinet of M. Jules Ferry, constituted 1880, he was appointed Minister of Foreign Affairs. The chief event of his tenure of this office was the occupation of Tunis. In 1881 he again abandoned public life for study and literary work. His greatest work is his complete French version of Aristotle (1837–93).

**BARTHEZ,** bär-tās, **Paul Joseph,** distinguished French physician: b. Montpellier, 11 Dec. 1734; d. 15 Oct. 1806. He was the founder of a medical school at Montpellier which acquired a reputation throughout all Europe. Later he received high honors at the hands of Napoleon. Among his numerous writings may be specially mentioned the 'Nouvelle Mécanique des Mouvemens de l'Homme et des Animaux.'

**BARTHOLDI,** bär'tōl'dē', **Frédéric Auguste,** distinguished French sculptor: b. Colmar, Alsace, 2 April 1834; d. Paris, 4 Oct. 1904. While a student in painting under the celebrated Ary Scheffer, he showed a greater bent and aptitude for sculpture, and devoted his energies to this branch of art, exhibiting numerous works at the salons. After the Franco-German War of 1870–71, in which he fought on the staff of Garibaldi, he came into prominence by the gigantic 'Lion of Belfort' carved out of the red rock on the hill which towers over the Alsatian city and commemorates its celebrated siege and defense. His statue of 'Lafayette Arriving in America,' now in Union Square, New York city, was presented to the metropolis by France as a mark of gratitude to Americans for sympathy and service during the Franco-German War. During the days of the Commune, when unable to pursue his studio work in Paris, Bartholdi visited the United States, and when arriving in the beautiful harbor of New York, conceived the idea of the colossal statue of 'Liberty Enlightening the World,' erected on one of the islands of the harbor to welcome with its flaming torch all arrivals in the Land of Liberty. On his return to France he divulged his plan, and a body of distinguished Frenchmen formed a society to carry out his project. Bartholdi gave 20 years of devoted effort to the work, personally superintending the raising of the subscription of $400,000 with which the French nation gave the statue to the United States. The donations came mainly from the pence of the poor, requiring in their collection enormous attention to detail, and when subscriptions lagged, Bartholdi pledged his own private fortune to defray the running expenses and practically impoverished himself over the work. Patiently overcoming all difficulties and obstacles, he had the satisfaction to see the statue, erected on Bedloe's Island, dedicated with imposing ceremonies by President Cleveland 28 Oct. 1886 (see LIBERTY, STATUE OF). Bartholdi was a prolific sculptor, and among the more notable of his other works are the figures of Washington and Lafayette on the Place des États-Unis in Paris; the Bartholdi fountain of the Botanical Gardens in Washington; the bronze group of the 'Lyre Among the Berbers, a Souvenir of the Nile,' exhibited at the Salon of 1857; 'Genius in the Talons of Misery,' Salon of 1859; 'Portrait of General Schramm, the Modern Martyr' (1864); 'Portrait of Laboulaye' (1866); 'The Leisures of Peace' (1868); 'Young Alsatian Grape Grower' (1869); an equestrian statue of Vercingetorix (1870); portraits of Messieurs Erckmann-Chatrian; his well-known 'Curse of Alsace' (1872); and 'Switzerland Assuaging the Sorrows of Strassburg, Siege of 1870' (1873).

**BARTHOLDY, Jakob Salomo,** German diplomat: b. 1779; d. 1825. He was of Jewish parentage, and received his education at the University of Halle. He joined the Austrian army and fought against Napoleon, and later entered the Prussian diplomatic service. He was in Paris with the Allied armies in 1814, and soon after was sent to Rome as Consul-General of Prussia. He was a great patron of the arts, and he had a great influence on the revival of fresco painting. The Berlin Museum of Art secured his remarkable collection of antiques and the frescoes of his mansion in Rome, the Casa Zuccari, were transferred to the Berlin National Gallery in 1887.

**BARTHOLIN, Thomas,** Danish physician, b. Copenhagen, 20 Oct. 1619; d. 4 Dec. 1680. After traveling throughout Europe, he became professor of anatomy in the University of Copenhagen, and made several discoveries in this science. He revised his father's 'Anatomy' and was a firm believer in Harvey's theory of the circulation of the blood. His son, Kaspar (1654–1704), was a famous anatomist, and his son Thomas (1650–90) was an antiquarian writer whose 'Antiquitatum Danicarum Libri Tres' (1689) is of much value.

**BARTHOLIN'S GLANDS** (named after their discoverer, Kaspar Bartholin) are the vulvo-vaginal glands, two in number, situated inside the vaginal opening. They secrete a mucous secretion and are subject to infection, forming abscesses.

**BARTHOLOMAE,** bär-tō-lā-mą, **Christian,** German philologist: b. Bayreuth, 21 June 1855. He was graduated at the Bayreuth Gymnasium in 1872, and afterward studied philology and general philosophy at Munich, Leipzig and Erlangen. In 1874 he returned to Leipzig to devote himself to comparative philology and Oriental studies. He became a professor at Halle in 1879, and in 1885 was nominated to an extra professorship at Münster. In 1898 he was appointed professor of Sanskrit and Indo-Germanic philology at Giessen, and took the same chair at Heidelberg in 1909. He has made several valuable contributions in the field of Aryan language and literature, including 'Das altiranische Verbum' (Munich 1878); 'Handbuch der altiranische Dialekte' (Leipzig 1883); 'Arische Forschungen' (3 vols., Halle 1882–87); 'Studien zur indogermanischen Sprachgeschichte' (Halle 1891); articles in Geiger and Kuhn's 'Grundriss der iranischen Philologie' (Strassburg 1896); 'Altiranisches Wörterbuch' (ib. 1904); 'Die Gathas des Awesta' (1905); 'Ueber ein Sassanides Rechtbuch' (1910).

**BARTHOLOMÉ, Paul Albert,** French sculptor: b. Thiverval, Seine-et-Oise, 1848. At first he devoted himself to the study of law, but in 1869 abandoned it for painting, which he

pursued successfully until the death of his wife in 1876. He then retired into seclusion and began to study sculpture without a master. In 1877 he erected a beautiful monument to his wife in the cemetery of Bouillant, Oise, the first example of his sculpture. His next work was the monument 'Aux Morts,' designed to represent the grief of humanity for the dead, the model of which was exhibited at the Salon of 1895. At the expense of the state and the city of Paris it was carved in limestone and erected in 1899 at the entrance of Père Lachaise Cemetery, Paris. It is one of the greatest sculptural monuments of modern times. His other notable works include the bronze 'Weeping Child,' in the Luxembourg; a series of female nudes, including that adorning the fountain in the Musée des Arts Decoratifs, Paris, 'The Secret,' Leipzig, and 'Girl Plaiting Her Hair,' in the Albertinum Museum, Dresden. He is represented in the museums of Brussels, Düsseldorf, Dresden, Mühlhausen and Marseilles, and has carved several beautiful busts and monuments in the Parisian cemeteries. He excels in delineating the nude in the attitude of grief. Consult Demaison, 'M. Bartholomé et le monument Aux Morts' (Paris 1900.)

**BARTHOLOMEW**, of the Martyrs, archbishop of Braga in Portugal: b. 1527; d. 1590. He wrote several treatises on spiritual subjects, was an intimate friend of Saint Charles Borromeo, and did for the Church in Portugal what Saint Charles did for religion in Italy. He was one of the most influential members of the Council of Trent, and the enactment of most of the reformatory decrees in that Council was due to his zeal and perseverance. Consult his 'Life' translated by Lady Herbert.

**BARTHOLOMEW, Edward Sheffield**, American sculptor: b. Colchester, Conn., 1822; d. 2 May 1858. He studied in New York and in Rome, where he lived during the latter part of his life. Among his works are 'Blind Homer, Led by His Daughter,' 'Eve,' 'Youth and Old Age,' 'Ganymede and 'Evening Star.'

**BARTHOLOMEW, John George**, English geographer: b. Edinburgh, 22 March 1860. He was educated at the Edinburgh High School and University. He was one of the founders of the Royal Scottish Geographical Society in 1884, and has since acted as its secretary. He introduced the layer system of contour coloring for topographical maps. He was appointed geographer and cartographer to the King, and is chief of the Edinburgh Geographical Institute. He has published 'Survey Atlas of Scotland' (1895–1912); 'Citizens' Atlas' (1898–1912); 'Atlas of Meteorology' (1899); 'Survey Gazetteer of the British Isles' (1904); 'Survey Atlas of England and Wales' (1903); 'Atlas of World's Commerce' (1907); 'Imperial Indian Gazetteer Atlas' (1908); 'Atlas of Zoögeography' (1911), and numerous educational atlases and special maps.

**BARTHOLOMEW, Saint** (son of Tolmai), the apostle, probably the same person as NATHANAEL, mentioned in the Gospel of Saint John as an upright Israelite, and one of the first disciples of Jesus. The name «Tholmai» was not a patronymic but a surname given to the apostle, a common practice, owing to the well-known scarcity of Hebrew family names. He is said to have taught Christianity in the south of Arabia, into which, according to Eusebius, he carried the Gospel of Saint Matthew in the Hebrew language. Chrysostom mentions that he preached in Armenia and Asia Minor, and tradition tells that he was flayed alive and crucified head downward. His day is the 24th of August.

**BARTHOLOMEW, Saint**, archbishop of Nakschiwan, 'Apostle of Armenia': b. Bologna; d. 1333. Having learned of his missionary zeal, Pope John XXII consecrated him bishop of Maraga in Armenia. He belonged to the Dominican Order and established a province of the same in Armenia. With the assistance of confrères he translated into Armenian the Psalter, the Missal, the moral tracts of Saint Augustine and Saint Thomas' four books, 'Contra Gentiles.'

**BARTHOLOMEW, Saint**, a small island of the Lesser Antilles, French West Indies, 130 miles to the northwest of Guadeloupe, nine square miles in area, and rising to the height of about 1,000 feet. It produces tobacco, sugar, cotton, indigo, cassava, drugs, etc. with some excellent woods (including lignum vitæ) and limestone. All the fresh water which can be procured is saved in cisterns, as there are no springs. The climate is healthy. The island is encompassed by formidable rocks, which render it dangerous of access to shipping. The only town is Gustavia or Saint Bartholomew. It was first colonized by the French in 1648, was ceded to Sweden in 1784, and again came into possession of France in 1877. Pop. (1911) 2,545. In the south Pacific Ocean are two other islands of the same name.

**BARTHOLOMEW, Saint, Massacre of**, the slaughter of French Protestants in Paris and other cities in France on various dates between 24 Aug. and 3 Oct. 1572. After the death of Francis II, Catherine de' Medici had assumed the regency for her son, Charles IX, then only 10 years old, and in spite of the opposition of the Guises she issued an edict of toleration in favor of the Protestant party, 1562, which she had favored in many ways. The party of the Guises now persuaded the nation that the Roman Catholic religion was in the greatest danger. Religious dissension grew rife, and each party, Roman Catholic and Huguenot, under pretext of religion, treated the other with cruelty. Prince Condé took up arms; the Guises had recourse to the Spaniards, Condé to the English, for assistance. Both parties were guilty of the most atrocious cruelties, but finally a peace was patched up. The Queen-mother caused the King, who had entered his 14th year, to be declared of age, that she might govern more absolutely under his name. Duke Francis de Guise had been assassinated by a Huguenot at the siege of Orleans; but his spirit continued in his family, which considered the Admiral Coligny as the author of his murder. The King had been persuaded that the Huguenots had designs on his life, and had conceived an implacable hatred against them. Meanwhile the court endeavored to gain time, in order to seize the persons of the prince and the admiral by stratagem, but was disappointed, and hostilities were renewed in 1565, and still again after the Peace of Lon-

jumeau, 1568, this time with greater cruelty than ever. In the battle of Jarnac, 1569, Condé was made prisoner and shot by Captain de Montesquieu. Coligny collected the remains of the routed army; the young Prince Henry de Béarn (afterward Henry IV, King of Navarre and France), the head of the Protestant party after the death of Condé, was appointed commander-in-chief, and Coligny commanded in the name of the Prince Henry de Condé, who swore to avenge the murder of his father. The advantageous offers of peace at Saint Germain-en-Laye (8 Aug. 1570) satisfied the chiefs of the Huguenots, particularly Admiral Coligny, who was wearied with civil war. The King appeared to have entirely disengaged himself from the influence of the Guises and his mother; he invited the old Coligny, the main support of the Huguenots, to his court, and honored him as a father. The sister of the King was married to the Prince de Béarn (18 Aug. 1572); this union opened up a field for the most distinguished Huguenots in Paris. Meanwhile the Queen had allied herself to the Guise family, and jealous of the influence of Coligny with the King, determined to have him assassinated. On 22 August a shot from a window wounded the admiral. The King hastened to visit him and swore to punish the author of the villainy; but on the same day he was induced by his mother to believe that the admiral had designs on his life, "God's death!" he exclaimed: "kill the Admiral; and not only him, but all the Huguenots; let none remain to disturb us!" The following night Catherine held the bloody council which fixed the execution for the night of Saint Bartholomew, 24 Aug. 1572. After the assassination of Coligny a bell from the tower of the royal palace at midnight gave to the assembled companies of 2,000 burghers the signal for the general massacre of the Huguenots. The Prince of Condé and the King of Navarre saved their lives by choosing the mass rather than death, and pretending to embrace the Roman Catholic religion. Roman Catholics as well as Huguenots fell victims to the political and personal hatred of the slayers. By the King's orders the massacre was extended through the whole kingdom; and if, in some provinces, the officers had honor and humanity enough to disobey the orders to butcher their innocent fellow citizens, yet instruments were always found to continue the bloody work. This horrible slaughter continued over 40 days; the victims are calculated at from 10,000 to 100,000. The Calvinist martyrology cites 786 names; 2,000 is the number computed by late historians. At Rome the massacre was given out as a victory over a great Huguenot conspiracy against the King; it was for this reason the Pope ordered the "Te Deum" to be chanted and a medal struck commemorating the event. Those of the Huguenots who escaped fled into the mountains and to Rochelle. The Duke of Anjou laid siege to that city but, during the siege, received the news that the Poles had elected him their king. He concluded a treaty, 6 July 1573, and the King granted to the Huguenots the exercise of their religion in certain towns. (See also HUGUENOTS). Consult Lavisse, 'Histoire de France' (Vol. VI, Paris 1904); Loughnan, 'The Month' (1892); White, 'The Massacre of Saint Bartholomew' (1867).

**BARTHOLOMEW'S HOSPITAL, Saint,** London, England, formerly the priory of Saint Bartholomew, founded in 1123, and made a hospital by Henry VIII in 1547. It contains 750 beds, and, on an average, 8,000 patients are annually admitted to the hospital, while about 150,000 out-patients are relieved by it. A large medical college is attached to the institution and a resident college for students.

**BARTHOLOMITES.** See BASILIANS.

**BARTHOU,** bär'-too', **Louis,** French statesman: b. Oloron-Sainte-Marie 1862. He received his education at the Lycée of Pau, entered public life and held various important government positions. He was several times Minister of Public Works, chief in the cabinet of the Minister of the Interior and Minister of the Interior. In 1913 he became Minister of Justice under the premiership of Aristide Briand in President Poincaré's first Cabinet. In March of the same year he was appointed Premier with the portfolio of Minister of Public Instruction. He resigned his office the following December. His publications include 'L'action syndicale' (1904); and 'Life of Mirabeau' (1913).

**BARTIMÆUS** (son of TIMÆUS), one of the blind beggars healed by Jesus at the gate of Jericho. He appears to have attracted the attention of the writers of the Gospel narratives from the fact that he was the spokesman of the beggars healed on that occasion and because he addressed Jesus with his Messianic title, "Thou Son of David."

**BARTIZAN,** a battlement on the top of a house or castle; a small overhanging turret projecting from the angle on the top of a tower, or from the parapet or other parts of a building; or the battlement surrounding a spire or steeple, or the roof of a cathedral or church.

**BARTLESVILLE,** Okla., city and county-seat of Washington County, on the Atchison, Topeka & Santa Fé, and the Missouri, Kansas & Texas railroads, about 125 miles from Oklahoma City. It has a county courthouse, a city hall costing $75,000, Elks Home and a Carnegie library costing $20,000. Bartlesville is the centre of the mid-continent oil field, with 16,000 producing wells, and has important oil interests. Washington County produces about 20,000 barrels a day, a third of the output of the entire region. There are also deposits of natural gas and zinc ore smelting interests. The annual payroll is $3,500,000. There are four banks with deposits of over $4,000,000. The value of city property as assessed is $7,000,000, and the post-office receipts in 1915 were $40,350. The city has a fine school system, with eight excellent buildings worth $30,000, and more than 2,700 school children. Bartlesville has 12 miles of asphalt and brick pavement, 30 miles of sewers and six miles of street railways. The city adopted the commission form of government in 1910. Pop. (1910) 6,181; (1916) 15,000.

**BARTLET, James Vernon,** English author and educator: b. Scarborough, 15 Aug. 1863. He was educated at Exeter College, Oxford. After studying for several years under Dr. Fairbairn and serving as fellow and lecturer he became first fellow of Mansfield College, and began lecturing on church history with the opening of the college buildings in 1889, re-

maining senior tutor in residence till 1900. He has published 'Early Church History' (1894; 1897); 'The Apostolic Age' (1900); 'Studies in the Synoptic Problem' (1911); 'Evangelical Christianity' (1912); and contributions to reviews and works of reference.

**BARTLETT, Edwin Julius,** American chemist: b. Hudson, Ohio, 16 Feb. 1851. He was graduated A.B., Dartmouth College, 1872; A.M., 1875; M.D., Rush Medical College, 1879; appointed associate professor of chemistry at Dartmouth College in 1878 and professor in 1883; is at present head of the department of chemistry. Professor Bartlett is a member of the American Chemical Society, fellow of the A. A. A. S., member of New England Chemical Club, member of the New Hampshire Historical Society, honorary member of the New Hampshire Medical Society, member of Dartmouth Scientific Association and Dartmouth Graduate Club, moderator of the town of Hanover, 1906–12, and sat in the New Hampshire legislature, 1913. He has traveled widely in Europe and the Levant, has been expert in many legal cases, and is the author of many papers and addresses on chemical and other subjects.

**BARTLETT, Elisha,** American physician and author: b. Smithfield, R. I., 1805; d. there, 18 July 1855. He was graduated from the medical department of Brown University in 1826, and delivered the course of lectures on pathological anatomy at the Berkshire Medical Institute in Pittsfield, Mass., in 1832. In 1836 or 1837 he was elected the first mayor of Lowell. He subsequently lectured at Dartmouth College, and in Transylvania University and the universities of Maryland and New York. In 1851 he became professor of materia medica and medical jurisprudence in the College of Physicians and Surgeons in New York, which place he held until his death. He published 'Essay on the Philosophy of Medical Science' (1844); 'Fevers of the United States' (1850); and a volume of poems, entitled 'Simple Settings in Verse for Portraits and Pictures in Mr. Dickens' Gallery' (1855).

**BARTLETT, Sir Ellis Ashmead.** See Ashmead-Bartlett.

**BARTLETT, Homer Newton,** American composer and organist: b. Olive, N. Y., 28 Dec. 1846; d. 1905. He began his public career when nine years of age, and at 10 composed violin music, piano duos, songs and vocal duets. He wrote a large number of anthems, quartets and glees for vocal rendering, and pieces for the flute, stringed instruments and military bands and orchestras. His best compositions include a three-act opera, 'La Valliere'; a cantata, 'The Last Chieftain'; an oratorio, 'Samuel,' etc.

**BARTLETT, Ichabod,** American lawyer: b. Salisbury, N. H., 1786; d. 19 Oct. 1853. He was graduated at Dartmouth College in 1808, commenced the practice of the law in Durham, but removed to Portsmouth, where his skill and ability soon commanded success. He is celebrated as an opponent of Webster and Mason. He was frequently a member of the State legislature, and of the United States House of Representatives for three terms, 1823–29.

**BARTLETT, John,** American author and publisher: b. Plymouth, Mass., 14 June 1820; d. Cambridge, Mass., 3 Dec. 1905. He entered the university book-store, became a publisher in Cambridge in 1836, and senior partner in the house of Little, Brown & Company in 1878. His works include 'Familiar Quotations' (1854; 9th ed., 1891); 'New Method of Chess Notation' (1857); 'The Shakespeare Phrase-Book' (1882); 'Catalogue of Books on Angling, Including Ichthyology, Pisciculture, etc.' (1882); 'The Complete Concordance to Shakespeare's Dramatic Works' (1894); and 'Poems.'

**BARTLETT, John R.,** American naval officer: b. New York 1843; d. Saint Louis, 22 Nov. 1904. He was appointed an acting midshipman in the navy from Rhode Island in 1859; entered the United States Naval Academy, where he remained till the beginning of the Civil War, when he was assigned to the West Gulf blockading squadron. He took part in the bombardment and passage of Forts Saint Philip and Jackson, and the Chalmette batteries, and the capture of New Orleans and attack on Vicksburg in June 1862. He was promoted lieutenant in 1864; took part in the bombardment of Fort Fisher in December, and the assault on its works in January. Subsequently he was on surveying duty in Nicaragua and on the United States Coast Survey; was promoted to captain, 1 July 1892; and retired 12 July 1897. After the declaration of war against Spain, in 1898, he was recalled to active service, and on 9 July succeeded Rear-Admiral Erben as commander of the auxiliary naval squadron, organized for the protection of the Atlantic coast cities.

**BARTLETT, John Russell,** American author: b. Providence, R. I., 23 Oct. 1805; d. 28 May 1886. He was educated for a mercantile career, and after 1837 entered the book-importing trade in New York. In 1850 he was appointed one of the commissioners to determine the Mexican boundary. In 1855 he was made secretary of State of Rhode Island. He published various valuable records, genealogies, local histories, etc., but his best known work is his 'Dictionary of Americanisms' (1850).

**BARTLETT, John Sherren,** Anglo-American journalist, founder of the *Albion* newspaper in New York: b. Dorsetshire, England, 1790; d. 24 Aug. 1863. He was educated as a physician in London; was appointed surgeon in the royal navy in 1812; sailed to the West Indies on board the packet *Swallow;* was captured by the American frigates *President* and *Congress,* under Commodore Rodgers, and remained a prisoner at Boston until discharged in 1813. At the close of the war he married a lady of Boston and established himself there as a physician. The *Albion* commenced by him in New York, 22 June 1822, as an English organ of conservative politics, gained a wide and profitable circulation. Bartlett subsequently commenced one or two other papers of a similar character at a cheaper price, and on the beginning of Atlantic steam navigation also established at Liverpool the *European,* a weekly compendium of the latest news for American circulation. Owing to the failure of his health, he withdrew from the *Albion* in 1848. He subsequently published the *Anglo-Saxon,* a weekly paper at Boston, which he continued about two years. In 1857 he served as English consul at Baltimore.

**BARTLETT, Joseph,** American wit, poet and adventurer: b. Plymouth, Mass., 1763; d. Boston, 27 Oct. 1827. He began the study of law at Salem, but soon gave it up for a voyage to England. Here he pursued the career of an adventurer, gambled, spent, got into prison, wrote a play for his release and went upon the stage himself. From an actor he became a merchant, and having sailed for America with a large supply of goods on credit, was shipwrecked on Cape Cod. In 1799 he delivered a poem on 'Physiognomy' before the Phi Beta Kappa Society of Harvard, satirical and clever, and said to touch upon the traits of individuals at the time. To the edition of this poem, published in 1823, were appended a number of 'Aphorisms on Men, Principles and Things,' the results of his various experience. The same year he delivered a Fourth of July oration at Boston, and afterward recited a poem, entitled the 'New Vicar of Bray,' which obtained considerable celebrity. He next attempted the practice of law and of politics in Maine, was elected to the State legislature, and nearly secured an election to Congress by his active exertions as a speaker and newspaper writer. He then practised law at Portsmouth, N. H., and finally closed his improvident life, a burden to his friends, at Boston. Consult Duyckinck's 'Cyclopædia of American Literature.'

**BARTLETT, Josiah,** American statesman: b. Amesbury, Mass., November 1729; d. 19 May 1795. He commenced the practice of medicine in 1750, at Kingston, and established a reputation, during the prevalence of the *angina maligna* in 1754, by treatment with Peruvian bark, in opposition to the usage of other physicians. He received several appointments from the royal governor, John Wentworth, but lost them in 1775, for being a zealous Whig. Being chosen delegate to the Continental Congress, he was the first who voted for, and the first, after the President, who signed the Declaration of Independence, his name being first called as representative of the most easterly province. He accompanied Stark in 1777 to Bennington. He was appointed chief justice of the common pleas in 1779, justice of the Supreme Court in 1784 and chief justice in 1788. He was an active member of the convention called to adopt the Federal Constitution in 1788. In 1790 he was president of New Hampshire, and in 1793 was chosen the first governor under the new State Constitution. He was also president of the medical society established in 1791, by his exertions. In all his various offices his duties were ably and faithfully discharged.

**BARTLETT, Paul Wayland,** American sculptor: b. New Haven, Conn., 1865. He entered the École des Beaux Arts, Paris, 1880, and won a medal at the Paris Salon of 1887. His principal works are an equestrian statue of General McClellan, 'The Dying Lion' and the 'Ghost Dancer,' in Philadelphia; the equestrian statue of Lafayette in Paris (presented to France by the school children of the United States); a statue of Gen. Joseph Warren in Boston; a statue of Benjamin Franklin at Waterbury, Conn.; statues of Columbus and Michelangelo in the Library of Congress; 'The Bear Tamer,' in the Metropolitan Museum of New York; and the six colossal figures over the central entrance of New York Public Library. In 1908 he was appointed officer of the Legion of Honor and was selected as a corresponding member of the Institute of France. He became director of sculpture in the School of Fine Arts, Glasgow, in 1913.

**BARTLETT, Samuel Colcord,** American educator: b. Salisbury, N. H., 25 Nov. 1817; d 16 Nov. 1898. He was educated at Dartmouth College, and became a teacher there and at Andover Theological Seminary. He had charge of a church at Monson, Mass.; subsequently becoming professor of philosophy in Western Reserve University, Ohio. He afterward became pastor of a church in Manchester, N. H., and later of the New England Church in Chicago. In 1858 he was made professor of biblical literature in the Chicago Theological Seminary, where he remained until 1873, when he spent a year in travel in the East. In 1877 he became president of Dartmouth College, a post he held until 1892, when he resigned. He was the author of a number of works, including 'From Egypt to Palestine' (1879); 'Sketches of Missions of the American Board'; 'Sources of History in the Pentateuch'; and 'The Veracity of the Hexateuch'; and also wrote a part of the American edition of 'Smith's Dictionary of the Bible.'

**BARTLETT, William Francis,** American military officer: b. Haverhill, Mass., 6 Jan. 1840; d. 17 Dec. 1876. He was a student at Harvard University at the outbreak of the Civil War, but left to enter the army. He was wounded in the battle of Ball's Bluff, suffering the loss of a leg, but continued in the service; was twice wounded at Port Hudson; and in the battles of the Wilderness, while leading the 57th Massachusetts regiment, was again wounded, taken prisoner and sent to Libby Prison. At the close of the war, he was made a major-general of volunteers for distinguished services in the field.

**BARTLETT, William Henry,** English topographical draughtsman: b. Kentish Town, London, 29 March 1809; d. 13 Sept. 1854. He served an apprenticeship with the distinguished architectural antiquary, John Britton, who employed him to make drawings for his 'Cathedral Antiquities' and 'Picturesque Antiquities of English Cities.' Bartlett subsequently traveled extensively abroad, paying four visits to the United States and Canada, and the works which he published, descriptive of the countries visited by him, obtained great success with the public. They include 'American Scenery' (1840); 'Canadian Scenery' (1842); 'Walks About Jerusalem' (1844); 'Forty Days in the Desert' (1848); 'The Nile Boat, or Glimpses of Egypt' (1849); 'Footsteps of Our Lord and His Apostles' (1851); 'The Pilgrim Fathers' (1853); 'Jerusalem Revisited' (1855).

**BARTLETT, William Holmes Chambers,** American soldier and scientist: b. Lancaster County, Pa., 1809; d. 11 Feb. 1893. He was educated at West Point, and as lieutenant of engineers was assistant professor there, 1827–29. He was engaged on the construction of Fort Monroe and Fort Adams; was assistant engineer at Washington, 1832–34; and again at West Point as assistant professor, 1834–36. When he resigned his lieutenancy in 1836, he was made full professor of philosophy at West Point, and held this position until he retired in 1871. He

was a member of the Natural Academy of Sciences and other scientific societies, and wrote several scientific books, including 'Treatise on Optics' (1839); 'Synthetical Mechanics' (1850–58); 'Acoustics and Optics' (1852–59); 'Analytical Mechanics' (1853–59); and 'Spherical Astronomy' (1858–59).

**BARTLEY, Elias Hudson,** American chemist: b. Bartleyville, N. J., 6 Dec. 1849. He was graduated at Cornell University in 1873; was an instructor there in 1874–75; professor of chemistry at Swarthmore College, 1875–78; lecturer at the Franklin Institute, Philadelphia, in 1877–78. He removed to Brooklyn in 1879; graduated at Long Island College Hospital in 1879; was lecturer there on physiological and practical chemistry in 1880–85; and then became professor of chemistry and toxicology. He was made chief chemist of the health department of Brooklyn in 1882. He is the author of several articles in Wood's 'Household Practice of Medicine' (1885) and of 'A Text-Book of Medical Chemistry.'

**BARTOL, Cyrus Augustus,** American Unitarian clergyman: b. Freeport, Me., 30 April 1813; d. 17 Dec. 1900. He was graduated at Bowdoin College in 1832 and at Cambridge Divinity School in 1835; became colleague pastor with Dr. Charles Lowell of the West Church (Unitarian) in Boston, 1837, and full pastor in 1861. He was a member of the Transcendental club. His works include 'Discourses on the Christian Spirit and Life' (1850); 'Discourses on Christian Body and Form' (1854); 'Pictures of Europe Framed in Ideas' (1855); 'History of the West Church and Its Ministers' (1858); 'Church and Congregation' (1858); 'Word of the Spirit of the Church' (1859); 'Radical Problems' (1872); 'The Rising Faith' (1874); 'Principles and Portraits' (1880).

**BARTOLI,** bär'tō-lē, **Adolfo,** Italian historian: b. Fivizzano, 19 Nov. 1833; d. 1894. He has long been a recognized arbiter of taste and the elegancies in connection with his country's literature; his 'First Two Centuries of Italian Literature' (1870–80) and 'History of Italian Literature' (1878–89) being the first histories of Italian literature conceived in a critical spirit. From 1874 till his death he was professor of Italian literature in the Institute of Florence.

**BARTOLI, Daniello,** a learned Italian Jesuit: b. Ferrara, 12 Feb. 1608; d. Rome, 12 Jan. 1685. He was the author of a celebrated history of the order of the Jesuits, published at Rome in six volumes (1650–73). Bartoli had access to many curious manuscripts in the Vatican, of which he availed himself. This gives to his work peculiar interest and portions of it, as for instance that on Asia, passed through several editions. The first edition of 1667 contains also an interesting account of the mission to Mongolia and a sketch of the life of Father Acquaviva. He also wrote on physics and philology. His works are marked by erudition, elegance and purity of style. A new edition of his complete works in 50 volumes appeared at Florence in 1826.

**BARTOLI, Pietro Santi,** sometimes called PERUGIO, Italian painter and engraver: b. about 1635; d. Rome 1700. He was a pupil of Nicolas Poussin. His engravings, originally over 1,000, are scarce and valuable. His skill as a copyist was so great that he could counterfeit the effects of time on the colors of pictures. The 'Admiranda Romanorum Antiquitatem Vestijia,' a collection of engravings much esteemed archæologically, is his most important work.

**BARTOLINI,** bär-tō-lē'ne, **Lorenzo,** celebrated Italian sculptor: b. Vernio 1777; d. Florence 1850. In his youth he was a pupil of Desmarets, a French painter, and made considerable progress; but the bent of his genius leading him rather to handle the chisel than the brush, he proceeded to Paris and entered in 1797 the studio of the sculptor Lemot. Napoleon entrusted him with a multitude of works, among others a colossal bust of the Emperor placed above the entrance of the French Institute and a magnificent statue of him, which, in consequence of the events of the restoration, was never delivered to government and is now in America. On the fall of the empire he returned to Florence, where he continued to exercise his profession. Among his greater works may be mentioned his groups of Charity, and Hercules and Lycas, and the beautiful monument in the cathedral of Lausanne, Switzerland, erected in memory of Lady Stratford Canning, who died there in 1817. Bartolini ranks next to Canova among modern Italian sculptors. Consult Canova, 'Schools and Masters of Sculpture' (1898).

**BARTOLOMMEO,** bär-tō-lŏm-mā'ō, **Fra,** or **BACCIO DELLA PORTA,** Florentine painter: b. Savignano 1469; d. Florence 1517. He learned in Florence the first principles of painting from Cosimo Roselli and acquired a more perfect knowledge of art by studying the works of Leonardo da Vinci. The most important of his early productions is the fresco of the Last Judgment, in which he was assisted by his friend Albertinelli. He was an admirer and follower of Savonarola, on whose death, in consequence of a vow made during the peril of persecution, he took the Dominican habit in 1500 and assumed the name of Fra Bartolommeo. For the space of four years he did not touch a pencil and employed it afterward only on devotional subjects. Raphael visited Florence in 1504 and gave instructions to Bartolommeo in perspective, receiving in return his lessons in coloring and handling of drapery. Some years afterward the latter visited Michelangelo and Raphael at Rome. After his return to Florence he executed several religious pictures, among which were a Saint Mark and Saint Sebastian, which are greatly admired. His style is severe and elevated, but very graceful in youthful figures; his coloring, in vigor and brilliancy, comes near to that of Titian and Giorgione. But he particularly excels in drapery, which none before him represented with equal truth, fulness and ease. Many of his drawings survive in the print collections of the Uffizi, Louvre, Munich, British Museum and Weimar Museum. Among his paintings excellent examples are 'Christ at Emmaus' (1507) in San Marco; 'Madonna with Saints John and Stephen' (1509) and 'Saints Mary Magdalen and Catherine' (1509), both in Lucca Cathedral. Others are 'The Madonna and Six Saints' (1509) in San Marco, Florence; 'The Betrothal of Saint Cather-

ine' (1511) in the Louvre; 'Madonna della Misericordia' (1515) at Lucca; 'Salvator Mundi,' 'Pietà,' and the famous 'Saint Mark,' all in the Pitti Palace. Consult Jameson, 'Memoirs of the Early Italian Painters' (1887); Symonds, 'The Renaissance in Italy' (1885); Radcliffe, 'Schools and Masters of Painting' (1898); Cartwright, 'The Painters of Florence' (1901). Consult also the biographies of Frantz (Regensburg 1879), Gruyer (Paris 1886), Knapp (Halle 1903) and Scott (London 1881).

**BARTOLOZZI,** bär-tō-lōt'sę, **Francesco,** Italian engraver: b. Florence, 21 Sept. 1728; d. Lisbon, Portugal, April 1815. He was the son of a goldsmith and studied at the Florentine Academy, where he excelled particularly in anatomy and drawing. In Venice, in Florence, Rome and Milan he etched several pieces on sacred subjects and then on the invitation of Dalton, librarian to George III, went to London, where he received great encouragement and accommodated himself entirely to the national taste, so as even to work in the popular red dotted manner. His pieces were so universally sought for that a complete collection of them was valued at £1,000. He was elected a member of the Royal Academy of Arts in London. After 40 years' residence in London he went to Lisbon to engrave on copper the portrait of the Regent, where he received, in 1807, the Order of Christ, and became director of the National Academy. With accuracy of design he united great delicacy of execution. Among his best engravings is the 'Death of Lord Chatham,' after Copley, and the 'Virgin and Child.' His works, among which are imitations in etching of drawings of the great masters, amount to more than 2,000. Consult Brinton, 'Bartolozzi and his Pupils in England' (London 1904); Bailly, 'Bartolozzi' (ib. 1907): "Bartolozzi and Other Stipple Engravers," in 'Great Engravers Series' (ib. 1906); Clement, 'Painters, Sculptors and Engravers' (ib. 1899); Tuer, 'Bartolozzi and His Works' (ib. 1882).

**BARTOLUS, Osso,** or **BARTOLUS DE SAXOFERRATO,** a celebrated Italian jurist: b. Sasso Ferrato, in the Marches of Ancona, about 1313; d. Perugia 1356. He took his degree of LL.D. at Bologna, became professor, first at Pisa and then at Perugia, was ennobled and honored with other distinction and privileges by the Emperor Charles IV and not only published many important works such as treatises 'On Procedure,' 'On Evidence' and commentary on the 'Code of Justinian,' but distinguished himself in various other branches of knowledge.

**BARTON, Andrew,** Scottish naval commander, who flourished during the reign of James IV and belonged to a family which for two generations had produced able and successful seamen. In 1506 he cleared the Scottish coasts of the Flemish pirates with which they were infested, and as a proof of the thoroughness of his work, sent the King three barrels full of their heads. In 1508 he was sent to assist Denmark against Lübeck. The damage he inflicted on Portuguese ships engaged in the English trade aroused great resentment in England and in an engagement between his ship, the *Lion,* and two ships specially fitted out against him, he was killed (2 Aug. 1511).

**BARTON, Benjamin Smith,** American naturalist: b. Lancaster, Pa., 10 Feb. 1766; d. Philadelphia, 19 Dec. 1815. He studied the natural sciences and medicine in Philadelphia, Edinburgh and London and took his degree at Göttingen. He practised medicine in Philadelphia and held successively the chairs of botany and natural history, materia medica and theory and practice of medicine in the university there. He became president of many learned societies, was a correspondent of Humboldt, and among other works, wrote 'Elements of Botany' (1812–14); 'Collections for an Essay toward a Materia Medica of the United States' (3d ed., 1810); and 'Flora Virginica' (1812).

**BARTON, Bernard,** English poet, often styled the Quaker poet: b. London, 31 Jan. 1784; d. 19 Feb. 1849. In 1806 he removed to Woodbridge, in Suffolk, where he entered into a business in coals and corn; but subsequently gave up his occupation, and in 1810 became clerk in a bank at Woodbridge, a situation which he held till shortly before his death. In 1824 a reading society founded by him at Woodbridge presented him with £1,200, and he afterward received a pension of £100 through Sir Robert Peel. His first appearance as an author was in 1812, when he published a small volume of poems under the title of 'Metrical Effusions,' which led to a correspondence with the poet Southey. This was followed in 1818 by 'Poems by an Amateur,' and in 1820 by a volume entitled simply 'Poems,' which became popular, and gained him the friendship of Lamb and Byron. Of his other productions the chief were 'Napoleon and other Poems' (1822); 'Poetic Vigils' (1824); 'Devotional Verses' (1826); 'A New-Year's Eve, and other Poems' (1828); besides many contributions to the annuals and magazines. His last work was 'Household Verses' (1845). His daughter, Lucy, published 'Selections from the Poems and Letters of Bernard Barton,' in 1849. His poetry, though deficient in force, is pleasing, fluent and graceful, animated by a love of nature and by a pure religious spirit. Consult Lucas, 'Bernard Barton and His Friends.'

**BARTON, Clara,** American philanthropist: b. Oxford, Mass., 1821; d. 12 April 1912. She early became a teacher and founded at Bordentown, N. J., a free school. In 1854 it had grown to 600, when she became a clerk in the patent office in Washington. On the outbreak of the Civil War she resigned her clerkship and became a volunteer nurse in the army hospitals and on the battlefield. In 1864 she was appointed to the charge of the hospitals at the front of the Army of the James. She was present at several battles, and in 1865 was placed by President Lincoln in charge of the search for missing men of the Union armies, having already devoted much time to that work at her own expense. In connection with this work she identified and marked the graves of more than 12,000 soldiers in the National Cemetery at Andersonville, Ga. On the breaking out of the Franco-Prussian War in 1870, she aided the Grand Duchess of Baden in preparing military hospitals, assisted the Red Cross Society, and, at the request of the authorities, superintended

the distribution of work to the poor of Strassburg in 1871, after the siege, and in 1872 did a like work in Paris. At the close of the war she was decorated with the Golden Cross of Baden and the Iron Cross of Germany. On the organization of the American Red Cross Society in 1881 she was made its president, and in that capacity in 1884 had charge of the measures to relieve sufferers from the Mississippi and Ohio floods. In 1883 she was appointed superintendent of the Reformatory Prison for Women at Sherborn, Mass. In 1884 she was the United States representative at the Red Cross Conference in Geneva. It was her suggestion that led to an amendment of the rules of the Red Cross Society permitting relief not only in war but in times of such other calamities as famines, floods, earthquakes and pestilence. In 1889 she had charge of movements in behalf of sufferers from the floods at Johnstown, Pa.; in 1892 distributed relief to the Russian famine sufferers; in 1896 personally directed relief measures at the scenes of the Armenian massacres; in 1898, at the request of President McKinley, took relief to the Cuban reconcentrados, and performed field work during the war with Spain; and in 1900 undertook to direct the relief of sufferers at Galveston, but broke down physically. She resigned from the Red Cross Society in 1904. She published 'History of the Red Cross' (1883); 'History of the Red Cross in Peace and War' (1898); 'Story of the Red Cross' (1904); 'Story of My Childhood' (1907). Consult Adams and Foster, 'Heroines of Modern Progress' (1913).

**BARTON, Sir Edmund,** Australian jurist and statesman: b. Glebe, Sydney, 18 Jan. 1849. He was educated at the Sydney Grammar School and the University of Sydney. He was called to the bar in 1871. He became a member of the legislative council and was speaker of the legislative assembly of New South Wales 1883–87. He was a member of the Federal conventions of 1891 and 1897–98. He was leader of the delegation to London with the Australian Commonwealth Bill in 1900. He became first Prime Minister and Minister for Foreign Affairs in the first Federal Cabinet of the new Commonwealth, and retired in 1903 to become puisne judge of the High Court of Australia. He was knighted in 1902.

**BARTON, Elizabeth,** English religious impostor (commonly called the Holy Maid of Kent): b. about 1506; d. 20 April 1534. She was used as an instrument by the adherents of Queen Catherine to excite the English nation against the proposed divorce of Henry VIII from his first wife, and the apprehended separation of the English Church from Rome, with which the King then threatened the Pope. Her delirious utterances, in a nervous illness, were made use of by the parish priest of Aldington, Richard Maister, and by a canon of Canterbury named Bocking, to persuade her that she was a prophetess inspired by God. Among other things she prophesied that Henry, if he persisted in his purpose of divorce and second marriage, would die a shameful death and be succeeded by Catherine's daughter. Her revelations, published and distributed by the monk Dering, produced such a fermentation among the people that Henry ordered the apprehension and examination of Elizabeth and her accomplices before the star-chamber. After they had there confessed the imposture they were condemned to make a public confession and to imprisonment; and the Maid, Bocking, Maister, Dering and three others were afterward adjudged guilty of high treason for a conspiracy against the King, and executed. The venerable Bishop Fisher and Sir Thomas More were among those accused of holding correspondence with the Holy Maid; and the former was pronounced guilty of misprision, or concealment, of treason in consequence.

**BARTON, George Aaron,** American educator and author: b. East Farnham, Quebec, 12 Nov. 1859. He was educated at Haverford College, where he was graduated in 1882, and at Harvard University. He was appointed minister of the Society of Friends in 1879, was teacher of higher mathematics and classics at the Friends' School, Providence, 1884–89, and has been professor of biblical literature and Semitic languages at Bryn Mawr College since 1891. In 1902–03 he was director of the American School of Oriental Study and Research in Palestine. He is a member of the American Oriental Society, the Archæological Institute of America and many other learned societies, both American and foreign. He has published 'A Sketch of Semitic Origins, Social and Religious' (1902); 'Roots of Christian Teaching as Found in the Old Testament' (1902); 'A Year's Wandering in Bible Lands' (1904); 'The Haverford Library Collection of Cuneiform Tablets, or Documents from the Temple Archives of Telloh' (3 parts, 1905–14); 'The Heart of the Christian Message' (2d ed., 1912); 'The Origin and Development of Babylonian Writing' (1913); 'Sumerian Business and Administrative Documents from the Earliest Times to the Dynasty of Agade' (1915); 'Archæology and the Bible' (1916); 'Commentary on Ecclesiastes' (in *The International Critical Commentary*, 1908); 'Commentary on Job' (in 'Bible for Home and School,' 1911); and contributions to 'Encyclopedia Biblica,' 'Jewish Encyclopedia,' etc.

**BARTON, George Hunt,** American geologist: b. Sudbury, Mass., 8 July 1852. He was assistant on Hawaiian Government Survey, 1881–83; assistant in geology in the Massachusetts Institute of Technology in 1883–84; then assistant professor of geology there; he also occupied the corresponding chair in Boston University and the Teachers' School of Science; and was assistant geologist of the United States Geological Survey. In 1896 he was a member of the 6th Peary expedition to Greenland. He is a member of the Boston Society of Natural History, the National Geological Society and the Geological Society of America; director of Teachers' School of Science from 1904; and member of many other posts of technical observation. He has traveled extensively in the United States, British America, Hawaii, Newfoundland, Labrador, Greenland and in Europe. He is the author of 'Outline of Elementary Lithology' (1900); 'Outline of Dynamical and Structural Geology.'

**BARTON, William,** American military officer: b. Warren, R. I., 26 May 1748; d. Providence, R. I., 22 Oct. 1831. He joined the Revolutionary army soon after Bunker Hill, and on the night of 10 July 1777, he per-

formed the exploit which made him famous. Leading a small party of men, in four whaleboats, across Narragansett Bay, he surprised and captured the British general, Prescott, at his headquarters, and hurried him away to Washington's camp in New Jersey. Barton received a sword from Congress, and was brevetted colonel. He was afterward a member of the State convention which adopted the Federal Constitution.

**BARTON, William Eleazar,** American clergyman and author: b. Sublette, Ill., 28 June 1861. He was graduated at Berea College in 1885 and at Oberlin Theological Seminary in 1890. He was ordained to the Congregational ministry in 1885, and held several pastorates in Tennessee and Ohio, then in Shawmut Congregational Church, Boston, 1893–99, and since 1899 the First Church of Oak Park, Ill. He was also associate editor of *Bibliotheca Sacra,* and editor of the pastors' department of the *Advance* 1904–12, and editor-in-chief since 1913. He has been lecturer on applied theology at the Chicago Theological Seminary since 1911, and on the staff of the *Youths' Companion* since 1900. He has been delegate to several national Congregational councils. He has written over 40 volumes, including 'A Hero in Homespun' (1897); 'When Boston Braved the King' (1899); 'What Has Brought Us Out of Egypt' (1900); 'Jesus of Nazareth' (1904); 'The History and Religion of the Samaritans' (1906); 'Into All the World' (1911); 'Day by Day with Jesus' (1913); 'The Law of Congregational Usage' (1915).

**BARTON, William Paul Crillon,** American botanist: b. Philadelphia, Pa., 17 Nov. 1786; d. 29 Feb. 1856, a nephew of Benjamin Smith Barton (q.v.). He was educated at Princeton College, and in the medical school of the University of Pennsylvania; was surgeon in the United States navy. He succeeded his uncle as professor of botany in the University of Pennsylvania, and became professor of botany and materia medica in Jefferson Medical College, in 1815. He organized the naval bureau of medicine and surgery of the United States, and was senior surgeon of the navy at the time of his death. He was author of 'Flora of North America' (1818–24); 'Vegetable Materia Medica of the United States' (1817–25); 'Compendium Floræ Philadelphiæ' (1818).

**BARTOW,** Fla., city and county-seat of Polk County, 45 miles east of Tampa, on the Atlantic Coast Line and Seaboard Air Line railroads. The city's principal features are a Carnegie library, county jail, courthouse, opera house and Summerlin Institute. Phosphate production is a leading industry. Fruit-growing is also important. The city has marble works, cigar and concrete factories, bottling works, planing and shingle mills and wagon works. The electric-lighting plant and the waterworks are the property of the municipality. Pop. 2,662.

**BARTRAM, John,** an eminent American botanist: b. Chester County, Pa., 23 March 1699; d. 22 Sept. 1777. He is frequently called the "father of American botany," and he founded at Kingsessing the first botanical garden in America. Linnæus termed him "the greatest natural botanist in the world." He published 'Observations of the Inhabitants, Climate, Soil, Diverse Productions, Animals, etc., Made in His Travels from Pennsylvania to Lake Ontario,' and a similar volume on eastern Florida (1766). He was in constant correspondence with European botanists, to whom he sent large collections of American plants, and would readily undertake a journey of a hundred miles to see a new plant.

**BARTRAM, William,** American botanist and ornithologist: b. Kingsessing, Pa., 9 Feb. 1739; d. there, 22 July 1823, a son of John Bartram. He spent five years in the Southern States studying natural history, and published the results in 'Travels Through North and South Carolina and East and West Florida.' He compiled a list of American birds, which was the best of its kind up to the time of Wilson.

**BARTSCH,** bärtsh, **Adam von,** Austrian engraver and art writer: b. Vienna, 17 Aug. 1757; d. there 21 Aug. 1821. At the age of 16 he brought himself into the notice of the Austrian government by a series of engravings of the gold and silver medals issued during the reign of Maria Theresa, and, in 1781, was appointed keeper of the prints of the royal collection. In 1803 he produced the first volume of his well-known and authoritative work, 'Le Peintre-Graveur,' in 21 volumes, giving a description of the principal engravers of Europe and criticisms on their works. He etched upward of 500 pieces, and published several catalogues of works of art.

**BARTSCH, Karl Friedrich Adolf Konrad,** German philologist: b. Sprottan, Silesia, 25 Feb. 1832; d. 19 Feb. 1888. He was professor at Rostock, where he established the earliest Germanic seminary in Germany 1858–71, and for the remainder of his life was head of the department of German and Romance philology at the University of Heidelberg. He was an extremely brilliant, versatile, industrious scholar whose attention was chiefly given to Middle High German and Provençal poetry, and was an original poet also, publishing a volume of lyrics in 1874. Beside an important study of the 'Nibelungenlied' (1865), he published 'The Song of Roland' (1874); a translation of Burns (1865); and of Dante's 'Divina Commedia' (1867), as well as introductions to the study of Provençal and old French, etc.

**BARU,** bą-roo', Philippines, a town of Leyte, 31 miles from the capital of the province, Taclobam. Pop. about 13,000.

**BARU** (Malay), a woolly material found at the base of the leaves of a sago palm-tree, *saguerus saccharifer.* It is much used in stuffing cushions and calking ships.

**BARUCH,** bā'rŭk (Hebrew, "the blessed"), the name of several individuals, of whom the most celebrated was the son of Neriah, scribe and assistant to the prophet Jeremiah. The brother of Baruch, Seraiah, was chief chamberlain to King Zedekiah. During the reign of Jehoiakim, about 607 B.C., Jeremiah while in prison, having been divinely commissioned to put all his prophecies in writing, dictated them to Baruch, who inserted them in a roll, which he was ordered to read both within and at the entrance to the temple. Possibly Baruch was

in doubt about undertaking the task, for the author of the Lamentations "spake unto Baruch . . . seekest thou great things for thyself? Seek them not. . . ." Jehoiakim on hearing its commencement cut it in pieces and threw it into the fire. At the captivity, after the destruction of Jerusalem, Jeremiah and Baruch were permitted to remain in Palestine, but were afterward carried into Egypt 588 B.C. According to Josephus, Baruch resided with Jeremiah at Masphatha when Jerusalem fell 586 B.C. The subsequent life of Baruch is little known. A Hebrew tradition has it that both died in Egypt at about the same time, while yet another story runs that, after the death of Jeremiah, Baruch went to Babylon and died there 574 B.C. One of the apocryphal books bears the name of Baruch. The Council of Trent gave it a place in the canon, but its authenticity was not admitted either by the ancient Jews or the early Christian fathers. See BARUCH, BOOKS OF.

**BARUCH, Books of.** In the Apocrypha, the book of Baruch may be said to be the only apocryphal book written in the style of the Hebrew prophets. While savoring strongly of an attempt at imitation, and possessing but little originality, it nevertheless contains some striking passages of considerable force. It dispenses advice and consolation to the distressed Israelites in a hopeful and encouraging tone, with a promise for the rebuilding of Jerusalem. An apocryphal letter of the prophet Jeremiah is usually given as chapter 6, addressed to the exiled Jews in Babylon. The book is undoubtedly by more than one author; the different styles, of which there are four, and the names for God lead to that belief. The early part is supplicatory, and the later, hortatory. Among experts in Bible criticism much divergence of opinion exists as to authorship and period, part apparently originating from Hebrew and part bearing the stamp of original Greek. Some commentators believe in a Hebrew original for both parts, and attribute the Grecisms to a skilful translator; others, again, hold the theory of an Aramaic original up to a certain part, or that the book was entirely composed in Greek. The traditional authorship by Baruch is rarely supported except among Roman Catholic writers. The statement in the Greek *Apostolic Constitution*, v. 20, that Baruch was read, with Lamentations, in the synagogues on the Day of Atonement, is said to be unsupported by evidence. Baruch was generally regarded as a continuation or appendage to Jeremiah by a large part of the early Christian Church, and writers were naturally attracted by iii, 37, which they quoted as a prophecy of the Messiah. The book was declared canonical by the Council of Trent (1545–63), though not without much hesitation and debate.

The *Apocalypse* of Baruch is a distinct extra-Biblical work, a 6th century document, written in Syriac, and was discovered about 1866 in the Biblioteca Ambrosiana in Milan by Antonio Ceriani, the famous Italian orientalist. He published translations of the document in Latin and Italian. It contains at the end a letter addressed to the nine and a half tribes of Israel carried into captivity across the Euphrates. Consult Ceriani, A., 'Le edizione e i mss. delle versioni Siriache del Vecchio Testamento' (1869), and 'Canonical Histories and Apocryphal Legends relating to the New Testament' (London 1873); Charles' 'Apocrypha of Baruch' (1896); Kneucker, 'Das Buch Baruch' (Leipzig 1879); Schürer, 'Geschichte des jüdischen Volks im Zeitalter Jesu Christi' (Leipzig 1886); 'Dictionary of the Bible'; 'Catholic Encyclopedia.'

**BARUS, Carl,** American physicist: b. Cincinnati, Ohio, 19 Feb. 1856. He studied at Columbia College and the University of Würzburg; was physicist of the United States Geological Survey in 1880–92; professor of meteorology in the United States Weather Bureau, 1892–93; and physicist of the Smithsonian Institution, in 1893–95. In 1895 he became professor of physics at Brown University. He is a member of the National Academy of Sciences; was vice-president and chairman of the section of physics in the American Association for the Advancement of Science in 1897; and is a corresponding member of the British Association for the Advancement of Science. He contributes to the *American Journal of Science* and has written also valuable monographs for the United States Geological Survey. He is an honorary member of the Royal Institute of Great Britain 1899; Rumford medalist, American Academy of Medicine (1900); president of American Physical Society (1905–10); honorary member International Congress of Radiology, as well as of many other scientific memberships, both foreign and domestic. He has put forth many and various professional papers, one of the latest being 'Diffusion of Gases Through Liquids' (1913).

**BARWELL, Richard,** English surgeon: b. 1826; d. January 1917. The oldest "fellow" of the Royal College of Surgeons, Barwell was for 33 years on the active surgical staff of Charing Cross Hospital in London. In the pre-antiseptic days he introduced important hygienic reforms in hospital procedure. He interested himself in the ligature of the large blood vessels, at that time a most important question in surgery, and devised a ligature material from the aorta of an ox which, though satisfactory, has been displaced by more modern materials. Barwell was one of the first to treat curvature of the spine by exercises, in place of the heavy spinal supports then in vogue. He made numerous contributions to surgical literature.

**BARY,** bä'rę, **Heinrich Anton de,** German physician and botanist: b. Frankfort-on-the-Main, 26 Jan. 1831; d. 19 Jan. 1888. He is noted for his investigations in cryptogamic botany, and was professor of botany at Freiburg in 1855, at Halle in 1867 and at Strassburg in 1872. Among his works are 'Die Mycetozen' (1859); 'Vergleichende Morphologie und Biologie der Pilze, Mycetozen und Bacterien' (1884); 'Vorlesungen über Bacterien' (1885).

**BARYE,** bą-re, **Antoine Louis,** noted French sculptor: b. Paris, 25 Sept. 1795; d. there, 25 June 1875. He studied engraving with Fourrier and a goldsmith named Beinnais; in 1812 was a topographical engineer and is supposed to have modeled a number of relief maps now in the French war office. In 1816 he studied drawing with the painter Gros, and sculpture with Basio; and in 1819 took the second prize for a 'Milo di Crotona,' which

was awarded him at a Concours of the Beaux Arts. From 1823 till 1831 he worked under Fauconnier, jeweler to the Duchesse d'Angoulême. In 1831 he exhibited the celebrated 'Tiger Devouring a Crocodile,' and was then employed by M. Lefuel to make four groups for the pavilion on the Place du Carrousel. He was an officer of the Legion of Honor, a member of the Institute and a professor of the Jardin des Plantes. Consult Brownell, 'French Art' (1892).

**BARYTA,** barium monoxide. See BARIUM.

**BARYTES,** a common name for BARITE (q.v.).

**BARYTON** (viola di Bardone), a chamber instrument, very popular in the 18th century, but now obsolete. It was somewhat like the viol di gamba in tone, but had a broader fingerboard, with six or seven gut-strings, while under the neck there were from 9 to 24 strings of brass wire, which were pinched with the point of the thumb to produce a sound, while the gut-strings were acted on by a bow.

**BARYTONE.** See BARITONE.

**BAS,** or **BATZ,** a French island in the department of Finisterre, two and one-half miles from the coast in the English Channel. Although but three miles long and two miles wide it is defended by two forts and four batteries. It has a lighthouse at an elevation of 212 feet, and three fishing villages.

**BAS-RELIEF,** bä'rę-lēf' (in Italian, *basso-rilievo,* or low relief), as applied to sculpture, a representation of one or more figures, raised on a flat surface or background, in such a manner, however, as that no part of them shall be entirely detached from it. *Alto-rilievo,* or high relief, is that in which the figures project half of their apparent circumference from the background. *Mezzo-rilievo,* or middle relief, is a third species, between the two. But generally speaking, the first term is made to comprehend both the others. The term itself was invented in Italy about the 11th or 12th century on the arrival of the arts; for the Greeks called such works simply carved (*anaglypta*); and to what is now called high relief they only applied the term rounded (*toreutikē*).

Bas-relief is particularly allied to architecture and under its dominion, since any considerable work of this kind must be made for the pediment, frieze or panel of a building, or for some other architectural work, such as a tomb, sarcophagus, pedestal or column. Bas-reliefs seem to have been invented in the earliest ages by the Egyptian people, for very many of their ancient monuments are covered with them, being executed in the same way as the hieroglyphics on their sepulchral chambers, obelisks and temples. This has been finely illustrated by the drawings and models of the tomb of Sethi I, originally discovered near the ancient Thebes by Belzoni, and which has since become familiar to many persons; all the walls of that extraordinary excavation being covered with thousands of figures in low relief, colored, and exhibiting the religious and warlike ceremonies of that wonderful people. Bas-reliefs, too, are found in India, decorating the subterraneous temples of Ellora and Elephanta in an astonishing profusion. The subjects are, of course, sacred, and in the style of drawing resemble very strongly those of the Egyptian monuments, but are evidently inferior, having larger heads and disproportioned bodies and limbs. Both these temples have been well illustrated and described by Thomas Daniell, R.A., and Captain Scaley; and for further information their respective works may be consulted. The Persians, too, like other ancient nations, employed bas-relief as a figured writing, thereby recording and representing the symbols of the power and energy of the Divinity, their own religious ceremonies and warlike achievements. The sculptures still existing on the ruins of the palace of Persepolis and the royal tombs accord in many striking particulars with those taken to England by Belzoni. In both the figures are arranged in lines, either horizontal or perpendicular, to suit the double purpose of decoration and description. In both of them the natives of Egypt are distinguished by the hood with lappets, the mitre, the full hair artificially curled, the close tunic, the apron of papyrus; the Hindus, by the necklaces, bracelets and anklets; the Hebrews, by their long beards and hair in spiral ringlets, their caps, full tunics, with regular folds and large sleeves; the Medes, again, by their close tunics; while the Persians themselves, in many particulars, resemble the Hebrews. The comparison may be easily made by looking over the prints in Sir Robert Ker Porter's 'Travels in Persia,' and those in Le Bruyn's 'Travels,' and then the engravings of Denon's and Belzoni's large works.

Since it has been well observed that the Greeks commenced in works of art precisely where the Egyptians left off, we find that the early bas-reliefs of Greece resemble pretty accurately those of Egypt. The objects are represented in the same hard and simple manner, and the marbles taken to England from the temple of Ægina serve to fill up the history of sculpture, in the interval between its first introduction into Greece and its full development under Phidias at Athens, when that glorious work, the Parthenon, was produced under the auspices of Pericles.

The draperies in these early bas-reliefs are thin and meagre, showing the forms of the body and limbs; the folds regular, small and distinct, consisting chiefly of perpendicular and zigzag lines. Some of the head-dresses consist of small curls, very like the fashions of barbarous nations; and in a bronze patera in the British Museum the club of Hercules is ornamented with spiral flutes, like one brought by Captain Cook from the Sandwich Islands.

The best examples of bas-relief now in existence are to be found within the walls of the British Museum — those of the Elgin marbles, which are executed in this manner. In the same collection are the tombstones of Xanthippus, and a man curbing a horse, both conjectured to be of the age of Phidias and which formed part of the Townley collection. In the collection of the Marquis of Lansdowne is a Greek bas-relief of Calchas, the size of life. At Wilton there is a beautiful representation of the 'Death of Meleager,' and a small but curious 'Hercules and Æglé'; a bas-relief composed of mosaic in natural colors which is supposed to be unique. The celebrated Barberini vase, formerly in the possession of the Duke of Portland, is of dark-blue glass,

bearing figures in bas-relief of white enamel or glass of admirable workmanship. Fragments of bas-reliefs of similar materials have been found in the ruin of Cæsar's palace at Rome, where they had been fixed in the walls. The two triumphal columns of Trajan and Antonine are covered with bas-reliefs containing several thousand figures (the first, indeed, has 2,500 human figures, according to Vasi), without reckoning horses, elephants, mules and the implements of war.

**BASAITI,** bä-sä-ē'tē, **Marco,** celebrated painter of Greek extraction: b. Friuli about the middle of the 15th century. He settled in Venice, where several of his paintings, remarkable for the brilliancy of their coloring, and distinguished by other excellences, are seen. His masterpiece, now in the Venetian Academy, is 'The Calling of St. Andrew and St. Peter.' He was the contemporary, and not infrequently the successful rival, of Gian Bellini.

**BASALT,** a class of rocks belonging to the volcanic series and characterized by augite and plagioclase feldspar as essential constituents, and by iron ores (magnetite and ilmenite) as accessory minerals. Olivine is also present in typical basalts; among the rarer minerals are orthorhombic pyroxene, black mica, hornblende, quartz, leucite and nepheline. Those varieties which contain notable quantities of olivine are known as olivine basalts, while the presence of leucite and nepheline characterizes the leucite basalts and the nepheline basalts. In texture the basalts vary from a finely crystalline apparently homogeneous mass to coarsely crystalline aggregates; but the normal type is a fine-grained, black rock, in which olivine is the only mineral that can be recognized without the microscope. The ground mass of the denser varieties contains more or less glass, due to the rapid cooling of the magma from the molten state. Basalts are extremely abundant especially in those regions which have undergone volcanic disturbance within geologically recent times; in fact most of the volcanoes of the present day erupt basaltic materials. In the United States they occur mostly in the region west of the Mississippi River, where great areas have been flooded by fissure eruptions. The tendency of basalt to assume a columnar structure often lends a characteristic appearance to scenery, as is illustrated by the famous Giants' Causeway on the north coast of Ireland.

**BASCINET,** or **BASNET,** a light helmet, sometimes with but more frequently without a visor, and worn by knights at times when, though danger was indeed not actually imminent, it might not have been safe to be altogether unarmed. It resembled a basin, and hence its name. It was in general use for English infantry in the reigns of Edward II and III, and Richard II, and is frequently mentioned in Parliamentary and other public records.

**BASCOM, Florence,** American geologist: b. Williamstown, Mass. She was educated at the University of Wisconsin and Johns Hopkins University, receiving from the first the degree of B.A. and B.L. in 1882, B.S. in 1884, and M.A. in 1887; and from the latter that of Ph.D. in 1892. She was the first woman to whom Johns Hopkins granted a degree and the first to receive a Ph.D. from any American college. She had much difficulty in securing admission to Johns Hopkins as graduate student, the only concession to her sex being that she might attend the lectures on geology, and use the laboratory apparatus in that branch. Her thesis on receiving her Ph.D. was on inorganic geology, palæontology and chemistry being minor subjects. Subsequently she engaged in teaching, was assistant editor of the *American Geologist,* became professor at Bryn Mawr College, and in 1899 was chosen to supervise the geological survey of Chester County, Pa. She has written many papers for technical journals and been engaged in the preparation of the United States Geological folios which treat of the Piedmont Plateau of Pennsylvania.

**BASCOM, Henry Bidleman,** American clergyman: b. Hancock, N. Y., 27 May 1796; d. Louisville, Ky., 8 Sept. 1850. He was licensed to preach in 1813, and made chaplain to Congress in 1823; president of Madison College, Pennsylvania (1827–29); agent of the American Colonization Society (1829–32); professor in Augusta College, Kentucky (1832–42), and of the Transylvania University, Kentucky (1842). When the Methodist Episcopal Church was divided in 1844 he went with the Southern portion of the Church. He was one of the leaders in the debate which led to the division and also became a leader in the organization of the new body. In May 1850 he was made a bishop of the Methodist Episcopal Church South. He was the first editor of *Quarterly Review* of Louisville, now at Nashville (1846–50). His writings were published in 1856 (4 vols., Nashville). Consult his life written by M. M. Henkle (Nashville 1856).

**BASCOM, John,** American educator and philosophical writer: b. Geneva, N. Y., 1827; d. Williamstown, Mass., 3 Oct. 1911. He was educated at Williams College and became president of the University of Wisconsin 1874–87, and from 1887–1907 professor of political science in Williams College. He wrote a number of philosophical works, among them 'Philosophy of English Literature' (1874); lectures before the Lowell Institute; 'Comparative Psychology' (1878); 'Sociology' (1887); 'An Historical Interpretation of Philosophy' (1893); 'Growth of Nationality in the United States' (1899); and 'God and His Goodness' (1901).

**BASE.** *In architecture:* (*a*) The part of a column between the bottom of the shaft and the top of the pedestal. In cases in which there is no pedestal, then the base is the part between the bottom of the column and the plinth. (*b*) A plinth with its moldings constituting the lower part (that which slightly projects) of the wall of a room.

*In botany,* a term applied to the part of a leaf adjoining the leaf-stalk, to that portion of a pericarp which adjoins the peduncle, or to anything similarly situated.

*In chemistry,* a body capable of replacing the hydrogen of an acid so as to produce a new compound called a «salt,» which contains the base and all the elements of the acid except the displaced hydrogen. The name was given by Rouelle in 1744, and is now loosely

used to signify a metal, a salt-forming oxide or hydroxide, or an organic body, such as an alkaloid, an amide, an amine, pyridine, quinoline, etc., which is capable of combining with an acid to form a salt. When oxides combine with acids their oxygen unites with the liberated hydrogen of the acid to form water. A body (like caustic potash KOH), is said to be strongly basic when it forms salts that are very stable and are not altered by hot or cold water.

*In fortification,* the exterior side of a polygon, or the imaginary line connecting the salient angles of two adjacent bastions.

*In geometry:* (*a*) The base of an ordinary triangle is its third side, not necessarily the one drawn at the bottom of the diagram, but the one which has not yet been mentioned, while the two others have (Euclid, book I, prop. 4, Enunciation). (*b*) The base of an isosceles triangle is the side which is not one of the equal two (*Ibid.* prop. 5, Enunciation). (*c*) The base of a parallelogram is the straight line on which in any particular proposition the parallelogram is assumed to stand (*Ibid.* prop. 35). It also is not necessarily drawn the lowest in the figure (*Ibid.* prop. 47. (*d*) The base of a cone is the circle described by that side containing the right angle which revolves (Euclid, book xi, def. 20). (*e*) The bases of a cylinder are the circles described by the two rotary opposite sides of the parallelogram, by the revolution of which it is formed (*Ibid.* def. 23).

*In heraldry,* the lower part of a shield, or, more specifically, the width of a bar parted off from the lower part of a shield by a horizontal line. It is called also base-bar, baste and plain point ('Glossary of Heraldry').

*In military affairs,* see TACTICS.

*In ordnance,* the protuberant rear portion of a gun between the knot of the cascabel and the base-ring.

*In sculpture,* the pedestal of a statue.

*In trigonometry, surveying* and *mapmaking,* a base or base-line is a straight line measured on the ground from the two extremities of which angles will be taken with the view of laying down a triangle or series of triangles, and so mapping out the country to be surveyed.

*In zoology,* that portion of anything by which it is attached to anything else of higher value or signification (Dana).

**BASE HOSPITAL.** See HOSPITALS, MILITARY.

**BASEBALL,** a popular sport in the United States, of such general interest as to be known as "the national game." It had its origin in the old English game of "rounders," but developed on American soil into a very different sport. In Philadelphia an early form was played under the name of "town-ball," and a similar game was known in upper Canada as early as 1838. It was in the neighborhood of New York, however, that baseball received its greatest development, regularly organized clubs contesting in the "Elysian Fields," at what is now the site of the city of Hoboken, N. J., as early as 1845. It was not until 1857, however, that the baseball convention was held for the purpose of framing uniform rules out of the various methods of each district and club, and in the following May the first "National Baseball Association" was organized.

The first real series of games played between organized clubs was that between teams picked from the various clubs of New York and Brooklyn on the old Fashion racecourse at Flushing, L. I., in 1858, the first authorized code of rules being formulated and published for their direction. From the present viewpoint these rules were crude. For instance, the regulation ball weighed 6½ ounces and measured 10½ inches in circumference. It was a lively ball (anticipating by 50 years the latest development of the golf-ball), being made with 2½ ounces of rubber, covered with yarn and leather. The bat was unlimited as to length, but was decreed not to exceed 2½ inches in diameter. In the delivery of the ball there was a greater difference than in any other respect as compared with the later development of the game: for the ball could only be pitched; all throws and jerks being prohibited. The pitcher was at liberty to take any number of steps before delivery, and his limit was anywhere behind a line 12 feet across and 45 feet from the home base. Then, too, he could pitch his ball almost without limitation so long as he pitched "as near as possible to the home base."

As then played, none but amateurs participated; indeed, no one could represent his club unless he had been a member for 30 days, and "money, place or emolument" was a bar. Games were originally played on free grounds, but on the establishment of the Union Ball Ground and the Capitoline Club of Brooklyn in 1863, the admission money went to the proprietor, the players later having a share, and thus was laid the foundation of professional play. So matters drifted for six years, with a gradual tendency to greater restrictions in rules, greater skill in play, and more and more professionalism, until 1869, when for the first time a salaried team, the "Red Stockings of Cincinnati," began a tour of games, and naturally carried everything before them. Through 1869 and up to June 1870, they played without losing a single game.

The delivery of the pitcher had been gradually developing. As early as 1860 the disguised underhand throw had come into vogue, and by 1866 Arthur Cummings, of the Excelsior Junior Nine, introduced a curved delivery. With the advent of the swifter-playing professional, and the reduced size and weight of the ball, came into necessity, and therefore into use, the various safeguards of padded gloves, catchers' mitts, breast-pads and masks.

By 1871 the game had become so extensive and the professional element so popular that a "National Association of Professional Baseball Players" was formed, and in 1875 the various club-owners took control of the professional players and organized "The National League of Professional Ball Clubs," which continued in undisputed possession of the professional field until 1890, when a rival association, "The American League," was founded. There are several other leagues of minor importance. Baseball naturally found favor in American universities and colleges, but its technique in the early days was crude, even among the best teams. Team play as now interpreted was almost unknown, the hitting was harder and the fielding poorer; the outfielders played much farther afield. As late as the middle sixties scores of 50 runs were not uncommon, and a hard-hitting college

team would make over 100. As late as 1867, when two college nines made, respectively, 13 and 8, it was considered a phenomenon. There is no intercollegiate championship in the ordinary sense; each college plays a set of games with other colleges. A full and exact knowledge of the game can be acquired only by a study of the official rules. Briefly, the game is played between two teams of nine men each, on a field in which a diamond-shape with sides of 90 feet each has been marked out according to certain technical rules, the apices of the angles being the home plate and first, second and third bases, reckoning to the right from the home plate. The pitcher's "box" is situated near the centre of the diamond about 60 feet from the batsman's stand, and from that point the pitcher is required to deliver balls to the batsman, pitched according to definite rules. The catcher stands behind the batsman; his principal office is to catch unhit balls and return them to the pitcher, or to throw to the basemen when the batsman is making a run. The fielders are known as the *infield*, consisting of first, second and third baseman and shortstop; and the *outfield*, of left, right and centre fielders. The office of the first section is to catch batted or thrown balls and to touch therewith the batsman running between bases, or, failing in this, to return the ball to the pitcher; that of the second section may be stated generally as the stopping or catching of batted balls and returning them to the pitcher or throwing them to the basemen for the purpose of putting out running batsmen. The positions and duties of the fielders are defined with strict limitations by the rules. The aim of each team is to make as many runs as possible. To score a run a player must make a complete circuit of the bases, but not necessarily at one hit. With his own hit he may get as far as first base; then may get to second base while the pitcher is delivering a ball to the second batter, and to the third base on the hit of that man, or even on the hit of the third batsman. When three men are put out, one inning is finished; and the other team takes its turn, with three men one after the other, and so on until there have been nine innings on each side. A batsman is out who is touched by the ball after leaving one base and before he reaches another, or whose batted ball is caught by one of the fielders before it reaches the ground. The batsman is also declared out when hit by a batted ball; or when being forced to run for a base by reason of all bases being occupied, the ball is held by the fielder at the base for which he is making. The batsman must not step out of his box, and must strike at every ball that crosses "the plate" on a level between his knees and shoulders — such are called "fair balls." If he fails either to strike at or to hit it counts as a "strike" against him, and if he fails three times he is out, providing the third ball is caught by the catcher before it reaches the ground. If the pitcher delivers a ball which does not pass over the plate in the defined zone, it is counted as "one ball" in favor of the batsman, and after four such balls he is entitled to go to the first base unmolested. Baseball has been introduced into England, but without much success. In Canada, Australia and Japan it has become popular, while many Chinese also have become expert at the game.

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**BASEDOW,** bä'zę-dō, **Johann Bernhard,** often called by himself BERNARD VON NORDALBINGEN, German educator: b. 11 Sept. 1723; d. 25 July 1790. He had in Dessau an institution for education called Philanthropinon. The chief features of Basedow's system are the cosmopolitan character which he endeavored to instil into his pupils, and the full development of the faculties of the young at which he aspired, in pursuance of the notions of Locke and Rousseau. With Salzmann, Campe, etc., he established some good institutions, and deserves special credit for his efforts for the education of the lower classes.

**BASEDOW'S DISEASE** (also called GRAVES' and EXOPHTHALMIC GOITER), a disorder due to excessive thyroid activity, characterized by rapid and irregular heart-action, large, protruding eye-balls, swelling of the neck, extreme nervousness and marked muscular tremor. An autonomic and a sympathetic type are recognizable. The vast majority of the mild cases is due to a faulty handling of the emotions, chiefly bound up in the function of self-preservation, but a not inconsiderable group result from acute inflammatory disease of the thyroid, consequent upon an infection. A proper psychotherapy, psychoanalysis, will relieve the milder and psychogenic cases, which are in the majority. Surgical intervention is necessary in the severe inflammatory types. (See GOITER). Consult Jelliffe and White, 'Diseases of the Nervous System' (1917); Falta, 'Ductless Gland Diseases'; Sattler, 'Die Morbus Basedowii.'

**BASEL,** bä'zel, **BASLE,** or **BALE,** bäl, Switzerland; one of the largest cities in the federation and capital of canton Baselstadt, 43 miles north of Bern. It consists of two parts, situated on opposite sides of the Rhine, and communicating by three bridges. A new granite structure since 1905 has replaced the old 13th-century wooden bridge so long a feature of the city, while attractive promenades have been laid out on the site of the mediæval walls and ramparts. The city is irregularly though fairly well-built, and has an ancient cathedral, or minster, consecrated in 1019, and the recently restored 16th-century city hall. Among the institutions of the city are the university, founded in 1459; various collections of paintings, a seminary for missionaries and a German Bible Society. In 1849 a large museum was completed, which contains the university library and all the collections belonging to the town. Its manufactures consist principally of ribbons, silk goods, cotton prints, linen, gloves, leather, jewelry and turnery ware. Its advantageous position on the Rhine, a little below

the point where it becomes navigable, and at the terminus of the French and German railways, has made it a centre of trade and starting point for travelers in Switzerland. It is the seat of a United States consulate. Basel was formerly a free imperial city, but joined the Swiss Confederacy in 1501. Buxtorf, Wetstein, Hermann, the Bernouillis and Euler were born in Basel. Erasmus also lived there several years and lies buried in the cathedral. Pop. about 133,000.

**BASEL, Confession of,** a Calvinistic confession introduced by Œcolampadius at the opening of the Synod of Basel (1531). It was adopted by the Protestants of Basel in 1534. Simple and comparatively moderate in its terms, it occupies an intermediate place between Zwingli and Luther.

**BASEL, Council of,** a council announced at the Council of Constance, and convoked by Pope Martin V and his successor, Eugenius IV. It commenced its sittings 14 Dec. 1431 under the presidency of the cardinal legate, Juliana Cæsarini of Saint Angelo. The objects of its deliberations were to extirpate heresies (that of the Hussites in particular), to unite all Christian nations under the Roman Catholic Church, to put a stop to wars between Christian princes and to reform the Church. The Pope, having learned that the Fathers were about to reopen a discussion upon Hussite doctrines already definitely pronounced upon, and also because of the expressed wish of the Greek bishops to reopen negotiations for reunion at a council to be held on Italian soil, instructed the cardinal legate to dissolve the Council. That body opposed the claims of the Pope, with severe animadversions on his neglect of the welfare of the Church, and, notwithstanding his repeated orders to remove to Italy, continued its deliberations under the protection of the Emperor Sigismund, of the German princes and of France.

In order to secure itself against the attacks of Eugenius IV it re-enacted the decrees of the Council of Constance concerning the power of a general council (in matters of faith, of schism and of reformation) to command the Pope, as well as all Christendom, and to punish the disobedience of the clergy, and even of the Pope, by virtue of its judicial character as the representative of the universal Church. It likewise pronounced all the doings and remonstrances of the Pope against its proceedings of no force, and began a formal process against him after he had issued a bull for its dissolution; summoned him, term after term, to appear before its tribunal, and exercised as much as possible the papal prerogatives in France and Germany.

Meanwhile it concluded, in the name of the Church, a peace with the Hussites (whose deputies appeared 6 Jan. 1433, with 300 horse, in Basel), by which the use of the cup in the communion was granted to them. This peace was ratified 20 Nov. 1433, by the Calixtines, the most powerful and finally prevailing party of the Hussites. The Council deviated on this point, indeed, from the decrees of the Council of Constance, but was obliged to do so in order to assist its most faithful protector, the Emperor Sigismund, to the acquisition of Bohemia by this compromise with the Hussites, who were not to be subdued by force. Eugenius IV revoked in 1433 his decree of dissolution, and at the 16th session, 5 Feb. 1434, was read a document subscribed to by the Pope, in which it was declared that the Council had been lawfully convened. In return the Fathers recalled everything that had been said against the person of the Pope or the dignity of his office. The Council, proud of its victory over the Pope, then attempted to interfere in the quarrels of the German princes, but was reminded by Sigismund, who protested against its intermeddling in the affairs of the Crown, of its proper point — the reformation of the Church. Toward the limitation of the power of the Pope, a proceeding which naturally evoked papal opposition, it had already made an important step by depriving him of the disposal of the prebends of cathedral and collegiate churches, which had been obtained by his predecessors; by restoring to the chapters the free election of their officers, and by obliging the Pope to confirm them gratuitously. It proceeded to the reformation of the clergy by ordaining that the excommunicated should not incur the penalties of their sentence before its publication; that interdicts should never be granted at the request of single individuals, and that repeated appeals should not be allowed on account of their complaints (20th session, 22 Jan. 1435); that the *annates* (q.v), the sums paid for the *pallia*, etc., should be regarded as simoniacal, and should not, under any pretext, be demanded or paid in future; that the divine service, the mass, and the canonical hours should be regularly observed by the clergy of each class; that disturbances of public worship should be prevented by a good ecclesiastical police; that the Feast of Fools and all irreverent celebrations customary in the Church about Christmas should be abolished (21st session, 9 June 1435).

In the 23d session (25 March 1436) the form of election, the confession of faith and the official oath of each Pope, by which he bound himself to obey the decrees of the Council, and the annual repetition of the same, were provided for; all preferment of the relations of a Pope was forbidden, and the college of cardinals was limited to 24 prelates and doctors of all nations, who should be elected by the free votes of the college, should be entitled to half of the revenues of the states of the Church, should watch over the Pope and always sign his bulls. They granted him only the right to dispose of the prebends belonging to the diocese of Rome, and abolished the investiture of Church preferments in reversion.

In the 26th session it again summoned him to appear, on account of his disobedience of its decrees, declared him guilty of contumacy, and, after Eugenius had opened his counter-synod at Ferrara, decreed his suspension from the papal chair in the 31st session (24 Jan. 1438). In the same session it forbade appeal to Rome without resort to the intermediate jurisdictions, left to the papal disposition but one out of 10 and two out of 50 prebends of a church, and destined the third part of all canonries which might become vacant to men who had taken regular degrees. The removal of Eugenius, however, seemed to be so questionable a proceeding that some prelates, who till then had

been the boldest and most influential speakers in the Council (for example, the cardinal legate Juliano, and the great canon Nicholas of Cusa, archdeacon of Liége, with the most of the Italians), left Basel and went over to the party of Eugenius. The archbishop of Arles, Cardinal Louis Allemand, a man of superior spirit, courage and eloquence, was now made first president of the Council and directed its proceedings with much vigor.

Although its number was diminished, its most powerful protector, the Emperor Sigismund, deceased, and its authority doubted by several princes and nations on account of its open rupture with the Pope, yet, in the 33d session (16 May 1439), after violent debates, in which the archbishop of Palermo, Nic. Tudeschi (known, under the name of Panormitanus, as the greatest canon of his time), who was the delegate of the King of Aragon and Sicily, took the part of the Pope — it declared Eugenius, on account of his obstinate disobedience of its decrees, a heretic, and formally deposed him, in the following session, as guilty of simony, perjury, violation of the laws of the Church and bad administration in his office. In the 34th session, June 1439, the Council pronounced the deposition of Eugene. At this session there were but two representatives of Spain and Italy, and the total number of prelates, including abbots, was 39.

Notwithstanding the plague, then raging in Basel, which continually diminished its number, it proceeded in a regular conclave (17 November of the same year) to elect the Duke Amadeus of Savoy to the papal chair. This prince then lived in retirement at Ripaglia, on the Lake of Geneva, and seemed particularly qualified for the office on account of his piety, his riches and his connections. But Felix V — this was the name he adopted — was acknowledged by only a few princes, cities and universities. The chief powers, France and Germany, assented to the decrees of the Council for the reformation of the Church, but they chose to remain neutral in the contest with Eugenius. Meanwhile he acquired new credit by the union concluded with the Greek deputies at Florence (but afterward rejected by the Greek Church) and the friendship of the Emperor Frederic III. The Council, on the other hand, denounced by Eugenius and deserted by its protectors, gradually declined under its feeble Pope, and, consulting only appearances and the personal safety of its members, held its 45th and last session 16 May 1443, after an inaction of three years interrupted only by a few insignificant decrees. At this session the place of meeting was changed to Lausanne. Here some of the prelates remained together under the Cardinal Louis Allemand until 1449, when, after the death of Eugenius and the resignation of Felix V, they gladly accepted the amnesty offered by the new Pope, Nicholas V, and pronounced the Council closed. The decrees of the Council of Basel are admitted into none of the Roman or official collections, and by the Roman Church are considered of no authority. They have been regarded, however, as of authority in points of canon law, in France and Germany, as their regulations for the reformation of the Church were to some extent adopted in both countries, and, as far as they regard clerical discipline, were actually enforced. Some concordats concluded at subsequent dates have modified the application of them but never formally and entirely annulled them. The Council of Basel was one of the most important in the history of the Church. The spirit of the councils of Pisa (1409) and of Constance (1414–18) was formulated in the decrees of Basel, and led to a twofold result: on the one hand the many salutary decrees of reform, on the other the clear expression of many dangerous principles in regard to the organization of the Church. Its history has often been misrepresented by historians, some seeing in it only an unhappy tendency from the true centre of unity; others regarding it as a great progressive movement, but forgetting that it was simply the growth of an expediency due to exceptional conditions. To know it impartially it must be studied in the original sources. Consult Hardouin, Labbé and Cossart; Mansi's collection consisting of 31 folios; Alzog, 'Church History'; Parsons, 'Studies in Church History'; Pérouse, G., 'Documents inédits relatifs au Concile de Bâle' (*Bulletin Hist. et Philol.*, year 1905, Nos. 3-4, pp. 364–398, Paris, 1906).

**BASEL, Treaties of Peace at,** 5 April and 22 July 1795, between Prussia, Spain and France, in which Prussia and Spain separated themselves from the coalition against France and acknowledged the republic. France retained the Prussian provinces on the left bank of the Rhine until the general peace, and accepted the mediation of Prussia when any German princes wished to conclude separate treaties of peace with it. A secret article was inserted in the treaty, the object of which was to secure compensation to Prussia in case the left bank of the Rhine should remain with France at the general peace. The Landgrave of Hesse-Cassel afterward concluded a treaty with the French republic at Basel 28 Aug. 1795, by which the latter retained possession of the territories of Hesse-Cassel on the left bank of the Rhine until the general peace. By the Peace of Basel all the conquests of France beyond the Pyrenees were restored to Spain, in exchange for which that country ceded to France the Spanish part of the island of San Domingo.

**BASEL, University of,** situated at Basel, an institution opened in 1460. After the Reformation it became strongly Protestant and exerted a widespread influence in behalf of the new faith. Among its professors were Erasmus, Œcolampadius, Euler and the Bernoullis. It is at present the principal theological school in Switzerland, with departments of medicine, law and philosophy. Its library contains 250,000 volumes and 4,000 MSS, chiefly dealing with the Reformation, besides other valuable collections and museums. There are about 950 students in attendance.

**BASELLA,** or **MALABAR NIGHTSHADE,** a monotypic but very variable genus of tropical herbs of the natural order *Chenopodiaceæ*. *B. rubra,* a twining annual or biennial plant, native of India, where it is cultivated as a pot herb, is often raised in Europe, and has been introduced into the United States as a substitute for spinach, which it succeeds in season (July until frost). It is decidedly mucilaginous when cooked. Sometimes it is used as a greenhouse climber. One variety bears edible tubers, and another furnishes a purple dye.

**BASEMENT,** in architecture, the base or lowest story of a building. It should have externally an appearance of strength, but its height and proportion to the rest of the edifice are very various, depending on the character of the apartments on the ground floor.

**BASEY,** bā'sā, Philippines, a town in the province of Samar, on the north shore of San Pedro Bay. It has a population of about 14,000.

**BASHAHR,** one of the Punjab hill states, on the lower slopes of the Himalayas, traversed from east to west by the Sutlej; area, 3,820 square miles. The Rajah and upper classes in the southern parts are Rajputs, and the people generally are of the Hindu race, but their observance of Hinduism is very partial. The government is in the hands of a British resident. Pop. over 80,000.

**BASHAN,** bā'shăn or bą-shän' (meaning uncertain, perhaps "soft, rich soil"), the name in Scripture for a singularly rich tract of country lying beyond the Jordan, between Mount Hermon and the land of Gilead. These two regions, Bashan and Gilead, attracted the attention of those tribes that desired to continue the pastoral life to which they and their fathers had been accustomed, and Gilead was accordingly divided between Reuben and Gad, while Bashan was given to the half-tribe of Manasseh. Its forests contain magnificent oaks, and the "strong bulls of Bashan" of ancient times are still represented by vast herds of black cattle. Bashan had been the kingdom of the Canaanite giant Og, whom Moses destroyed; and one district of the country, Argob, had at that time 60 fenced cities, with walls, gates and bars, besides many unwalled towns, remains of which are yet to be seen. Among the cities of this region were Edrei, Kenath, Golan and Bozrah. After the captivity it is mentioned as divided into Trachonitis (the ancient Argob), Gaulanitis (Golan), Auranitis (Hauran, mentioned by Ezekiel) and Batanæa, or Bashan proper.

**BASHAW, Edward,** English Non-conformist theologian: d. Newgate 1671. He was imprisoned in Newgate because of his refusal to take the oath of allegiance and supremacy. He is the author of 'Antisocinian Dissertations,' and a 'Dissertation on Absolute Monarchy.'

**BASHFORD, James Whitford,** American clergyman and educator: b. Fayette, Wis., 27 May 1849. He was graduated at the University of Wisconsin in 1873, and at the Theological School of Boston University in 1876; became instructor of Greek at the University of Wisconsin in 1874, and president of the Wesleyan University of Ohio from 1889 until 1904 when he became a bishop of the Methodist Episcopal Church. His works include 'Science of Religion' (1891); 'God's Missionary Plan for the World' (1907); numerous published sermons, and contributions to periodical literature.

**BASHI-BAZOUKS,** properly **BOZOOKS,** irregular troops in the pay of the Turkish Sultan. The term means "light-headed." They are a wild, turbulent body of men, mostly from Turkey in Asia, and in the duties with which they are entrusted resemble the Cossacks in the former Russian imperial army. In 1876 the Bashi-Bazouks were guilty of great atrocities in checking a threatened insurrection in the district around Philippopolis in eastern Rumelia, which led to the Russo-Turkish War of 1877-78.

**BASHI ISLANDS.** See BATAN ISLANDS.

**BASHKIRS,** or **BASHKEERS,** a tribe of half-civilized people subject to Russia, and inhabiting the banks of the Ural and Volga. They are probably descended from the Nogay Tartars and resemble them in their manners. They formerly roamed about, under their own princes, in southern Siberia. To avoid the Siberian khans they settled in their present territory, extended themselves along the Volga and the Ural, and submitted to the Khan of Khazan. At the time when this state was overthrown by Ivan II they voluntarily took refuge under the Russian sceptre; but their frequent revolts long prevented their increase and kept them in a weak condition. They number about 500,000, and inhabit chiefly the governments of Orenburg, Perm and Samara. They are Mohammedans, and live chiefly by hunting, the breeding of cattle and horses, and keeping of bees. They prepare from mare's and camel's milk a fermented beverage, *koumiss,* which is their favorite drink. They furnish the Russian army with a body of irregular cavalry.

**BASHKIRTSEFF,** bäsh-kērt'sēf, **Marie,** Russian author: b. Russia 1860; d. of consumption, Paris 1884. She came of a noble and wealthy family, went to Italy to study singing, and to Paris to study art. Her fame rests on her private 'Journal,' which seems to have been written with ultimate publication in view. It begins with her 13th year and continues through her later life. According to her own words, it was intended to be "the transcript of a woman's life." It appeared in Paris in 1885, and was abridged and translated into English in 1889, and was called by Gladstone "a book without a parallel." Like Rousseau's 'Confessions,' it claims to be an absolutely candid expression of individual experience. From the age of three years she cherished inordinate ambition, and felt herself destined to become great as a singer, writer, artist or queen of society. Admiration was essential to her, and she records compliments to her beauty or her erudition with equal pleasure. Her life was a curious mixture of the interests of a precocious though attractive society girl with those of a serious student. Her chronic discontent was due to the disproportion between her aspirations and her achievements. She was always self-conscious, and her book reveals her longings, her petty vanities and her childish crudities, as well as her versatile and brilliant talents. Madame de Staël's 'Corinne' appears to have been her model.

**BASIC SLAG,** the slag of refuse matter which is obtained in making basic steel, and which, from the phosphate of lime it contains, is a valuable fertilizer.

**BASIC STEEL.** See STEEL MANUFACTURE.

**BASIL** (*Ocimum*), a genus of fragrant annual herbs of the family *Menthaceæ,* natives of warm climates, cultivated for culinary purposes and for ornament. The species generally raised are sweet basil (*O. basilicum*), bush or dwarf basil (*O. minimum*), (considered by some botanists a form of *O. basilicum*), and

tree basil (*O. gratissimum*). The name basil is also applied to certain species of several other related genera; for instance, *Kœlia* and *Calamintha*. For culture and uses, see HERBS (*Culinary*).

**BASIL,** bā'zĭl or băz'ĭl, **Saint,** surnamed THE GREAT, bishop of Cæsarea, Cappadocia: b. Cæsarea, in Cappadocia, probably 329; d. 378. He was studying in Athens, and there became the friend of Gregory, afterward Bishop of Nazianzus. He was baptized in 357, and after extensive travels retired to the desert of Pontus and there founded an order of monks named Basilians. He succeeded Eusebius in the see of Cæsarea in 370, denounced the apostasy of the Emperor Julian, and by his opposition to Arian doctrines greatly offended the Emperor Valens. The liturgy of Saint Basil — not wholly his — is still used in the Eastern Church, and his rule is still observed in the monastic institutions. In his doctrine he emphasized the trinity rather than the unity of the Godhead, and he declined to admit the claims of the see of Rome to primacy in the Christian Church; but he stood out as the champion of orthodoxy in the East, and promoted union between the two great branches of the Church. With Gregory of Nazianzus and his brother Gregory of Nyssa he was founder of what is called the "Cappadocian theology." He was a voluminous writer of theological subjects, "in purity and perspicuity surpassing most of the heathen as well as the Christian writers of his age." Consult Murray's 'Dictionary of Christian Biography' (London 1911).

**BASIL I,** Roman Emperor in the East: b. Macedon, of poor parents, about the beginning of the 9th century; d. 886, from a blow given him by a stag while hunting. In his 25th year he made his way to Constantinople, and gained the favor of an archimandrite, who procured him service with an officer of the court of the Emperor Michael III. Later he was appointed head-chamberlain to the Emperor. Despite intrigues against him he advanced so rapidly in the Emperor's favor that he was adopted as his colleague. He murdered his chief rival, Bardas, and knowing that Michael had rendered himself odious by his cruelty and debauchery, he headed a body of conspirators and murdered him in his bed in 867, and usurped the throne. Notwithstanding his criminal acts, he proved an able and equitable sovereign, paid equal attention to the internal administration and the foreign relations of the empire, and not overlooking even its religious interests, sent an archbishop into Russia and laid the foundation of that ascendency which the Greek Church has so long possessed in that country. He compiled a body of laws called the Basilica, which, augmented by his son and successor, LEO THE PHILOSOPHER, were in force till the fall of the empire. Basil I deprived Photius of the see of Constantinople, and restored Ignatius; but on the death of the latter he recalled Photius. He successfully carried on war with the Saracens. The versatility, if not the depth of his intellect, is strikingly displayed in his exhortations to his son Leo, which are still extant. Consult Vogt, 'Basil I' (Paris 1908).

**BASIL II,** Roman Emperor in the East: d. 1025. On the death of his father, the Emperor Romanus the Younger, in 963, he was kept out of the succession for 12 years by two usurpers; the first, Nicephorus II (Phocus), who died in 969, and the second, Johannes (John) Zimisces, who associated Basil and his brother Constantine with him in the empire in 975, and died the following year, leaving the whole power to Basil although Constantine was still his colleague in name. His reign was almost a continuous warfare, in which the contending parties seemed to vie with each other in committing deeds of cruelty. In 1014, after a great victory over the Bulgarians, in which he had taken 15,000 prisoners, he had 99 out of every 100 deprived of their eyes and thus sent home. The sight of this horrible cruelty perpetrated on his soldiery caused the death of Samuel, King of the Bulgarians. The war ended in 1018 by the complete conquest of Bulgaria.

**BASILEAN MANUSCRIPTS,** two manuscripts of the Greek New Testament, now in the library of Basel: (1) a nearly complete uncial copy of the Gospels of the 8th century; (2) a cursive copy of the whole New Testament except the Apocalypse, of the 10th century.

**BASILIAN,** bā-sē'lē-ān, Philippines, the largest island of the Sulu Archipelago. It is of oblong form, about 36 miles long and situated south of Mindanao, from which it is separated by a strait nine miles wide. The island is mountainous, and most of it is covered by virgin forests. The soil is rich and produces a variety of valuable crops, including cotton, coffee, sugar, chocolate, tobacco, indigo and spices of all sorts. Basilian has about 8,000 inhabitants and three excellent harbors. The name is also applied to the whole group of 34 adjacent islets; total area, 350 square miles. The leading port is Isabella, on Basilian Strait, 580 miles from Manila.

**BASILIAN LITURGY,** that form for celebrating the eucharist drawn up, toward the close of the 4th century, by Basil the Great, still used in the Greek Church.

**BASILIAN MONKS,** a monastic order, chiefly belonging to the Greek Church, who strictly follow the rules of Basil, the great Saint Basil (q.v.), who, after visiting the monasteries of Egypt, Syria and Palestine, induced many to enter the monastic life and even to found convents. His rule, which was founded in 358, was confirmed by Pope Liberius in 363. In 379 there were at least 80,000 in the eastern monasteries. Many convents were dispersed in the 8th century during the iconoclast persecutions, and all began to languish about the time of the eastern schism. The order now comprises priests, lay-brothers, cenobites living in community, anchorites in cells and hermits in solitudes. They are governed by an archimandrite who has several convents under his jurisdiction, and by exarchs deputed by the archimandrite to visit the convents. The order has developed more extensively in Russia than in other countries. In Austria, Poland and Hungary there are many communities, known as Ruthenians, in union with the Roman Catholic Church. In Italy also they had convents in Calabria, Sicily and Naples. In Spain they flourished for nearly two centuries until 1835, when they were suppressed. The communities

of Sisters of Saint Basil were founded by Saint Maerina, sister of Saint Basil. Other communities following the rule of Saint Basil are the Melchites in Libanus; the Bartholomites of the Armenian rites, so called because, after taking refuge in Genoa in 1307, they had possession of Saint Bartholomew's Church there until 1659.

Saint Basil, in the monastery which he founded near Neocæsarea, set his face against the very ascetic tendencies which had already asserted themselves in monastic life in the Catholic Church. While strongly insisting on fasting and prayer he maintained that neither should be allowed to interfere with work, which should always form an integral part of the life of every monastery. He taught that monasteries should be near towns in order to permit the monks to extend aid to all those who required it, which it was the duty and obligation, he asserted, of every monk to give. His program insisted upon common meals, common work and common prayer, the latter seven times a day. Unquestioned obedience to the superior, self-denial, chastity, renouncing of all wealth and property were exacted by Saint Basil of all who entered his monastery. During his life the members of the order were cenobites, never hermits, for whom he had little respect. So strong became the influence of the Basilians that they practically drove the hermit orders out of Cappadocia and the neighboring provinces and finally established their order as the all-prevailing form of monasticism throughout the Greek and Slavonic countries. About the beginning of the 9th century Theodore, abbot of the monastery of Studium, in Constantinople, gave a real constitution and codified laws to the order of the Basilians. These were gradually adopted by all the monasteries of the order throughout Greece and, later on, by all those in the Slavonic countries. This explains the statement often made that "The Rules of Basil and the Constitution of Theodore the Sudite, with the Canons of the Councils comprise the greater and most important part of the monastic law of the Greek Church." Theodore made the sphere of action and the aims of the order very definite, dividing the day time between work, reading, liturgical services of the Church and prayer. The work element tended to make the order very popular so that Theodore had in his own monastery over 1,000 monks, many of whom were counted among the most famous copiers of manuscripts in Constantinople, then the most celebrated centre of learning in the East.

The first Russian monastery was founded at Kiev about 1050 by a monk from the great Basilian centre of Mount Athos, in Greece; and in less than a century the order had spread pretty well over the domains of the Tsar, from which it was rapidly extended to all the other Slavonic countries. In Russia there exist today nearly 500 monasteries, in Turkey over 100, and in all the Slavonic countries outside Russia probably as many as in Turkey. Among the 4,000,000 people following the Ruthenian rites there are numerous Basilian monasteries which, while owing allegiance to Rome, follow, in practically every other respect, the rules and ordinances of the Greek Church. All the saints on their calendar are those of the East and not those of the West, and they adhere strictly to the rules of the order as laid down by Basil and Theodore. Most of the adherents of the Lithuanian faith are to be found in Galicia; but there are more than half a million of them in Austria, principally in the Polish part. In fact, the order is represented in every part of ancient Poland. In Hungary, where the Basilian order was once strong, it now has but little influence. The monasteries among the Armenians are nearly all under the rule of Saint Basil.

**BASILICA.** The word basilica (meaning a kingly or magnificent building) is of Greek derivation, but the buildings so termed appear to have originated with the Romans. The basilica edifices of the Greeks and Romans were the courts of justice and commercial meeting places of the people. The judicial court was presided over by the *archon basileus*. As its title describes, it was a building of magnificence comporting with the importance it held in the civic functions. The basilica style of construction was that used for the earliest of the churches of the primitive Christians, and it is claimed by some authorities that the first Christian worship in public (on Constantine's accepting the Christian creed) was held in the pagan basilicas.

The typical basilica was an oblong edifice surrounded by a colonnade (*peristyle*) and the interior also was divided by rows of columns. Vitruvius says the old Roman basilica was closed in by a wall having a doorway within it, or was freely open like the Greek Colonnades. The interior of the building was divided lengthways, by two rows of columns, into three naves, the central one being the widest. At one end was the tribunal where the seated judges presided over the public court, and the opposite end was the entrance. The early Christian basilica was planned on the above lines. The interior of the Constantine style of basilica has been described as being divided into the three following open sections or spaces: Starting with the *pronaos*, destined for the catechumens, next came the *chorus*, where the choristers, instrumental musicians and exorcists performed their functions. Lastly, beyond, was the *sacrarium*, where the altar was located, near which the deacons and subdeacons were seated. The *abside* (apse) or *presbyterium* held the ordained priests on a semi-circular bench (*consistorium*) interrupted in the middle by a more elevated seat (*suggestus*) reserved for the bishop. The side aisles received the congregation (men at the right, women at the left). Most basilicas had an *atrium* or *narthex* (covered vestibule supported by columns) as entrance. The early buildings were covered with a flat, wooden roof.

About the first innovation in basilica structure made by the early Christian Church was the extension from the main building of the *apsis*, usually in semi-circular form. The roof over the central nave was also raised a story higher than the side walls (*clerestory*), affording light from windows in the extended walls. Other excrescences crept in from time to time, such as side chapels for special services, and even towers on the front walls. Some authorities define the *basilica period* as from 300 to 800 A.D.

**Pagan Basilicas.**— Probably the first basilica was that erected in Rome by Cato Censorinus (184 B.C.) — the basilica Porcia. Other noted ancient pagan basilicas in Rome were: Basilica Sempronia, erected by Tiberius Sempronius Gracchus; basilica Opimii, by Consul Quintus Opimus (151 B.C.), basilica Æmilia, by Æmilius Paulus; basilica Julia, commenced by Julius Cæsar and finished by Augustus (about 25 A.D.). Three moderate-sized basilicas were discovered in Pompeii. Vitruvius wrote a description of the basilica built by him at Favo.

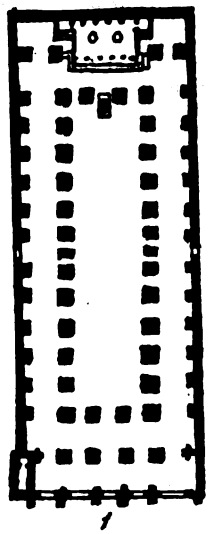

FIG. 1.—Typical Ground-plan of Grecian or Roman Pagan Basilica.

**Christian Basilicas.**— Of basilicas that were in ancient Rome we know of: Saint Peter's, Saint Paul's, those of Saint John Lateran, Saint Clement, Sta. Maria in Trastevere and Saint Lawrence. Present existing basilicas in Rome are: Saint Peter's, Saint Paul's, those of Saint John Lateran, Saint Clement, Saints Nereo and Achilleo, Sta. Maria Maggiore, Saint Paul's without the walls (reconstructed 19th century). Other noted basilicas are: Saint Apollinaris in Classe, near Ravenna; Saint Apollinaris in Ravenna; Torcello Cathedral, near Venice; Saint Ambrose, Milan; Saint Restitua, Naples. In Germany are: The Cathedral at Treves, built about 4th century (has one story and flat roof); Saint Godehard and Saint Michael in Hildesheim; the Abbey Church in Quedlinburg. In England are, notably: Saint Barnabas at Oxford and Saint James at Leicester. Saint Jean-Baptiste Church, Lexington avenue and 76th street, New York city (recently erected), is said to best represent the basilica style of any edifice in the United States.

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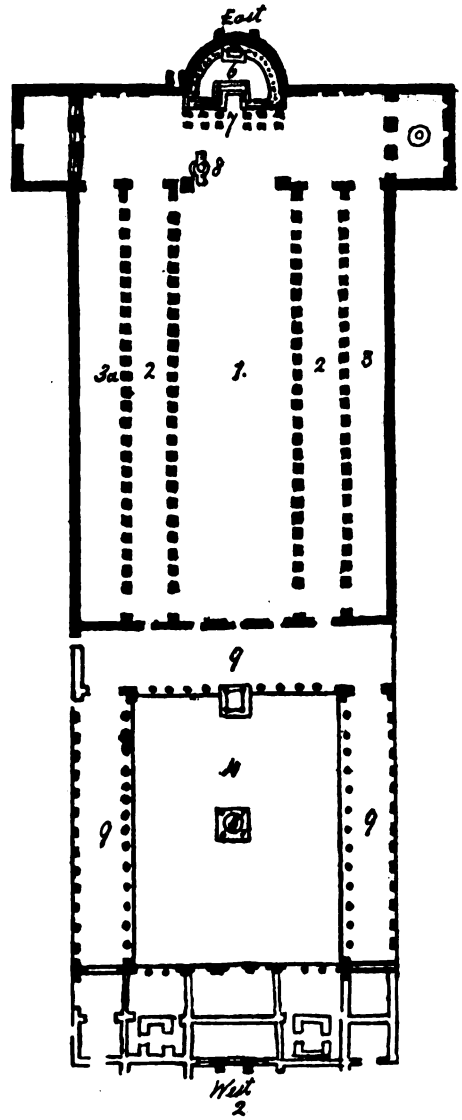


FIG. 2.—Ground-plan of St. Peter's Basilica, Rome. (1) Nave; (2) Inner Aisle; (3) Outer Aisle for Men; (3a) Outer Aisle for Women; (4) Atrium; (5) Well; (6) Tribunal or Bema (abside); (7) Presbytery; (8) Gospel Ambo; (9) Peristyle.

der abendländischen Kirchengebäude' (Vienna 1878); Wurz, Hermann, 'Zur Charakteristik der klassischen Basilica' (Strassburg 1906); Zestermann, 'Die antiken und christlichen Basilicen' (Leipzig 1847); Kraus, in 'Realencyclopädia der christlichen Alterthümen' (Freiburg 1882), gives a long list of early basilicas outside Rome under article "Basilica."

CLEMENT W. COUMBE.

**BASILICA**, a code of laws founded on the code of Justinian, supposed to have been named

after the Greek Emperor Basilius I, in whose reign its compilation was begun. It was finished by Leo the Philosopher and revised by order of his son Constantine Porphyrogenitus in 945. It consisted of 60 books, but we no longer possess them in a complete form. The principal editions are those of Fabrot (7 vols., Paris 1647), and Heimbach (Vols. I–V, Leipzig 1833–50).

**BASILICATA,** bä-zĭl-ē-cā′tą, the ancient Lucania, in southern Italy, composed solely of the province of Potenza; so called after the Emperor Basilius II, who reconquered it from the Saracens and Lombards in the 11th century. It is mountainous, several peaks rising to upward of 4,500 feet (Monte Pollino, 7,375 feet). The Apennines here divide into two parts, which branch off to the east and west. From these the rivers Bradano, Basento, Salandrella, Agri and Sinni take their source, and after draining this fertile district, fall into the Gulf of Taranto in the Ionian Sea. There are also many lakes, some of volcanic origin. The chief are Monticchio, Pesole, Maorno, and Santa Palagina. The bulk of the people are poor and ignorant, and talk a dialect called *basilisco*. Its coast line being for the most part marshy, and, as a consequence, unhealthful, the province derives next to no commercial benefit from it. The orange and lemon grow well near the coast. Other products are cotton, flax, silk, honey, wax, licorice, dried fruit, saffron, tobacco, etc. Mineral springs are many, chiefly sulphurous. There are marble quarries at Avigliano, Latronico, Muro, Lucano and Picerno; chalk at Mauro Forte and Montemuro; transparent quartz at Lagonegro; tufa at Matera; and excellent lignite at San Chirico Raparo and Rotonda. Area, 3,845 square miles; pop. about 490,800.

**BASILICON,** bą-zĭl′ĭ-kŏn, a name of several ointments, the chief ingredients of which are wax, pitch, resin and olive oil.

**BASILICON DORON** (the royal gift), the title of a book written by King James I in 1599, and printed in Edinburgh in 1603, containing a collection of precepts on the art of government, and maintaining the claim of the king to be sole head of the Church.

**BASILIDES,** bą-sĭl′ĭ-dēz, founder of one of the most remarkable sects of ancient Alexandria. He lived under the reigns of Trajan, Adrian and Antoninus, but the place of his birth, supposed to be in Persia, Syria or Egypt, is unknown. He was well acquainted with Christianity, but, under the pretense of freeing it from corruption, corrupted it still more by mixing it up with the wildest dreams of the Gnostics and peopling the earth and the air with multitudes of æons. He had numerous followers who spread from Syria and Egypt into Italy, and even as far as France, but they suddenly sank into obscurity and are scarcely heard of after the 4th century.

**BASILIO DA GAMA, José,** Brazilian poet: b. San José 1740; d. Lisbon 1795. His principal poem gives a picturesque and romantic account of the bloody wars which the Portuguese waged, in 1756, against the natives of Paraguay. He was a protégé of the Brazilian Minister Pombal, who gave him employment in his Cabinet. He shared Pombal's exile, and also dedicated verses to him in token of his gratitude. On his return to Rio de Janeiro he was favorably received by the authorities and the literary notabilities, and with their co-operation he became one of the founders of the first Brazilian Academy. In 1790 he again had to resort to flight, and he succeeded in escaping to Lisbon. He was the author of many lyrical pieces and sonnets, and of a poem, 'Quitubia,' written on an African chieftain whose devotion to Portugal engaged the poet's sympathy; but the most abiding monument of his genius is his 'Uruguay,' which is still popular wherever the Portuguese language is known.

**BASILISCUS,** brother of Verina, wife of Leo, Emperor of the East: d. A.D. 477. In his youth he obtained some successes against the Scythians, and in 468, through the influence of his sister, was appointed to command the immense armament fitted out at Constantinople against Genseric, King of the Vandals in Africa. This expedition consisted of upward of 1,100 vessels, conveying soldiers and sailors to the number of more than 100,000 men, and its equipment is said to have cost about $25,000,000. But this vast fleet, after reaching the coast of Africa in safety, was altogether destroyed or dispersed by Genseric, through the incapacity or treachery of its leader. Basiliscus escaped to Constantinople, and obtained the pardon of the Emperor only by the earnest intercession of the Empress. After the death of Leo, and of his successor, Leo II, in 474, Basiliscus usurped the imperial throne. But he was unable to sustain himself in this position, and was not long after overthrown and put to death by Zeno, the legitimate heir.

**BASILISK,** băz′ĭ-lĭsk, according to Pliny (lib. viii, c. 21), a kind of serpent found in the African deserts, named *basiliskos*, or little king, because its body was marked with bright spots, and those on the head had the appearance of a crown or diadem. It had a very pointed head, with fiery eyes, and was of a dark color, verging to blackness. All other snakes were said to fly from the sound of its hissing; and instead of trailing along like other serpents the basilisk raised its body nearly erect, and, as it passed along killed the herbs and fruits by its touch, and even by its breath. Yet this monster was destroyed by weasels. If these fables had reference to any real animal, it is probable that it was a species somewhat similar to the *cobra de copello*, or the asp viper. Both are accustomed to erect a very considerable part of the body, though not to move forward in this way. It is highly probable that the basilisk of the ancients was merely a creature of fiction.

The name is now applied to one of the Central and South American lizards of the family *Iguanidæ* and genus *Basiliscus*, remarkable for the high and erectile crests which are developed along the back and tail of the males. They have long legs and long flexible toes, enabling them to climb trees with great activity. They prefer such trees as overhang the water, into which they plunge at any sign of danger. They feed entirely upon vegetable matter. The best-known species is *Basiliscus americanus*, which has a length of nearly three feet, three-fifths of which is tail. In color the basilisks are green and brown, with dark cross-bars on the back.

and the crest of the males is red. In early spring they lay about a dozen eggs in a hole among the roots of a tree. See also IGUANA.

**BASILOSAURUS.** See ZEUGLODON.

**BASIN,** in physical geography, the whole tract of country drained by a river and its tributaries. The line dividing one river basin from another is the watershed, and by tracing the various watersheds each country is divided into its constituent basins. The basin of a lake or sea comprises as well all the territory drained by the rivers which run into it. Such hydrographic basins owe their origin either to erosive action or to a depression of the earth's crust. When rivers become established upon a new land surface they proceed to deepen and widen their channels, and in course of time may appreciably lower the level of the drainage area. Glaciers are also important agents in the establishment of hydrographic basins, as is illustrated by the numerous rock basins (now occupied by lakes) that were hollowed out by the great ice-sheets that once invaded northern North America and Europe. Other depressions have been formed by vertical movements of the strata comprising the earth's crust. The Great Basin lying between the Rocky Mountains and the coast ranges, and many of the lake basins of central Africa, originated in this way. In geology a basin is the synclinal arrangement of strata so that they dip or are inclined toward a common centre. The Paris Basin and the London Basin are familiar instances. See RIVER; LAKE; VALLEY, etc.

**BASINGSTOKE,** England, town and parish of Hampshire, situated near the source of the Loddon, 18 miles north-northeast from Winchester. Its streets are well built, paved, and lighted, and the town is amply supplied with water. It has a town-hall, containing a spacious corn-market and ballroom. It has also a fine Gothic church, erected in the time of Henry VIII; several other places of worship; a mechanics' institute, with good library; and numerous charities. A considerable trade is carried on in corn, coal, timber and malt, and it has manufactures of agricultural implements, clothing, malt, liquors, etc. In the neighborhood are the ruins of Basing House, belonging to the Marquis of Winchester, which withstood the forces of the Commonwealth for four years, but was at last taken by Cromwell and burned to the ground in 1645. Pop. 11,540.

**BASKERVILLE, Charles,** American chemist: b. Noxubee County, Miss., 18 June 1870. In 1886–87 he studied at the University of Mississippi and in 1890 was graduated at the University of Virginia. He also studied at Vanderbilt University and at the University of Berlin. From 1891 to 1904 he was successively instructor, assistant professor and professor of chemistry and director of the chemical laboratory at the University of North Carolina. In 1904 he was appointed professor of chemistry at the College of the City of New York. Professor Baskerville discovered the chemical elements of carolinium and berzelium and has invented processes for refining oils, etc. He has made extensive investigations in the chemistry of anæsthetics and in the applications of radium in medicine. He has written 'School Chemistry' (1898); 'Key to School Chemistry' (1898); 'Radium and its Applications in Medicine' (1909); 'General Morganic Chemistry! (1909); 'Laboratory Exercises,' with R. W. Curtis (1909); 'Progressive Problems in Chemistry,' with W. L. Estabrooke; 'Qualitative Analysis,' with L. J. Curtman; collaborator in 'Municipal Chemistry'; 'Anesthesia,' with J. T. Gwathmey; also scientific educational and technological articles in various periodicals.

**BASKERVILLE, John,** English printer and artist: b. Wolverley, Worcestershire, 1706; d. 1775. Inheriting a small estate, he was brought up to no profession, but, acquiring great skill in penmanship and carving letters on stone, at the age of 20 he settled at Birmingham as a writing-master. He subsequently engaged in the manufacture of japanned works, and in 1750 entered upon his great career as printer and typefounder, in which he displayed extraordinary ability, as well as in the manufacture of the ink and paper used in his productions. His first great work was an edition of Virgil, in royal quarto, 1756, which was followed by many of the Latin classics, and some English ones, in quarto and smaller sizes. After his death his types and matrices were sold to Beaumarchais at Paris for £3,700. Baskerville prints are in continuous demand in England to-day.

**BASKET,** a vessel made of osier twigs or other flexible materials, as rushes, strips of wood, splits of bamboo, rattan, etc., and used for holding and carrying all sorts of commodities. The word is of Britanno-Celtic origin and still subsists in the Welsh language in the form *Basgawd,* from *Basg,* plaiting, net-work: it was adopted into the Latin language in the 1st century with form little altered — *Bascauda.* The baskets made in Britain were highly prized by the Romans, and the poets Juvenal and Martial make mention of them as articles of no trifling value. They were evidently regarded as rare exotic curios in Juvenal's day, for the poet, in drawing an exaggerated picture of the shipwreck in which his friend Catullus threw overboard his most cherished possessions, couples Bascaudæ (baskets) with articles of chased silver wrought by famous artists (Sat. xii.). And Martial (xiv, 99) makes the British basket say of itself:—

Barbara de pictis veni bascauda Britannis,
Sed me jam mavult dicere Roma suam—
"The Basket Barbaric, I'm come from the painted Britanni,
But Rome now would choose rather to title me Roman."

In primæval times basket-making was a branch of the art of weaving, and both of these arts grew out of the still more primitive one of wattling, first employed in making enclosures. Tylor ('Early History of Mankind') notes the existence of wicker-weaving among primitive tribes throughout the world. This is the first step in the art of weaving textile fabrics. It is practised, or rather was practised, by the natives of New Zealand and of northwestern America, and as late as 1856 by an Indian tribe living northwest of Lake Huron. In the lake habitations of Switzerland have been found specimens of wicker-weaving work consisting of strands of untwisted fibre, probably hemp, bound together by transverse strands wattled in among them; and in the same localities have been found specimens of the same kind of weaving but of a progressively higher and finer type. There is even a genetic relation between the arts of

basket-making and pottery, proved by specimens of rude pottery found in all quarters of the world: in these are seen the impresses of the basket-work on which the clay was molded and which was burnt away in the kiln. Even after the art of molding the clay without the basket-work frame was invented, the potters seem to have imitated the markings left by it. Among the Indians of the Mississippi Valley along the Gulf, all pottery vessels of large size used to be modeled in baskets of willow or splints, which, being burnt off, their markings remained. Shields of basket-work covered with hide were in use among the Britons at the time of Cæsar's invasion, and similar shields are still employed by primitive peoples wherever they live in savage isolation. Boats, too, of basket-work, with a covering of hide (coracles), were used by the ancient Britons, and boats of the same type were seen by Herodotus (i, 194) navigating the Euphrates. These were of round form, without distinction of bow and stern, and similar boats are still in use on some rivers in India. On account of its lightness, combined with strength and durability, basket-work is preferred to joinery in the manufacture of various commodities, as window-screens, pony-carriage bodies, chairs, tables, etc. In South America the natives weave baskets of rushes capable of holding liquids, and those of Tasmania, now extinct, used to weave of leaves water-tight vessels. The material most commonly employed in basket-making is the willow or ozier twig, and the production of this material is an important industry in France, Germany, Belgium, Holland and Britain. The product of France and Britain is the most highly esteemed for firmness, toughness and evenness; that of Germany is reputed inferior to the French; the Dutch product is in least esteem, being soft and pithy. Besides ozier twigs, a great variety of other materials are employed in basket-making. In this country coarse, strong baskets are made of shavings or long broad splits of various tough woods. In China and Japan the usual materials are bamboo and rattan, and the Chinese and Japanese excel in the manufacture of wares of these materials, their products being unrivaled for fineness, elegance and finish; and some of their work, as in the encasing of the egg-shell porcelain of the Japanese, is marvelous for the delicacy of the manipulation; even the examples seen in our marts, of common little porcelain saucers so encased in basket-work, are worthy of admiration for painstaking workmanship. The fronds of the Palmyra palm, originally employed in India in making "Cajan" baskets, now afford a staple material for use in the art throughout the world. So, too, *Phormium tenax*, native of New Zealand, which yielded to the natives of that country their peculiar basket-making material, is now employed in all countries for the same purpose.

Basket-making is one of the simplest of the mechanic arts; and the workman, in making baskets designed for use, not for ornament or to please the fancy, has no absolute need of tools or apparatus beyond those requisite for cutting the rods and interlacing them — a knife and a bodkin, with a mallet to beat them into place. The process can be learned in principle by inspection of a basket-maker at work in fashioning a basket from the foundation to the rim. Having provided a sufficient quantity of rods or splints of much greater length than the proposed dimensions of the finished work, he lays a number of them on the floor in parallel pairs at small intervals in the direction of the longer diameter of the basket; this is the woof, so to speak. Then these are crossed at right angles by two of the largest osiers, with their thick ends toward the workman, who sets his foot upon them; next, each of these is woven alternately over and under the lengthwise parallel pieces, and thus the parallel pieces are held fast; this is the "slath" — the foundation. Now the end of one of the two transverse rods is woven over and under the lengthwise rods all round the bottom till that whole rod is worked in; and the same is done with the other transverse rod, and then additional long osiers are woven in till the bottom is of the required size. The bottom is now finished and work begins on the superstructure by driving the sharpened large ends of a sufficient number of long, stout osiers between the rods at the bottom from the edge toward the centre; these are the ribs or skeleton, being set up in the direction of the sides; between these ribs other rods are woven in till the structure reaches the desired height To finish the edge the ends of the ribs are turned down over each other and thus compactly united. A handle is added by forcing two or three sharpened rods of the requisite length down through the weaving of the sides, close together, and pinning them fast a little below the brim; the rods are then either bound or plaited in any way the workman chooses.

Our North American Indians were once among the most expert basket-weavers in the world. Now only the older Indians know the art, and certain tribes whose work was incomparably fine and beautiful have already lost it. After much pauperizing under the abominable reservation system, it was decided that the Indians needed an industry to save them from sinking still lower. Lace-making, after Brussels and French patterns, was first superimposed on a Minnesota reservation, whence it has spread. Now, lace-making, which has been developed by the European woman, fits her like a glove; and quite as truly, basket-making fits the Indian like a moccasin. Yet the Indians have succeeded at making lace, for they have remarkable skill with the fingers. An enlightened administrator of Indian affairs has taken up the task of human development in the right way and has made plans to revive basket-making by introducing it into the government Indian schools, where the children, who now know nothing of this beautiful art, may learn from the only masters capable of teaching them — their own people, directed by white teachers who know the needs of the constantly widening market. Hundreds of thousands of dollars' worth of baskets are imported from Japan and Germany every year — money which by every right should be earned by our capable and needy Indians; and better than the money they will earn is the satisfaction of doing what they do with surpassing skill.

**BASKET-BALL,** a distinctly American game. Its history begins in 1891, when a lecturer in psychology at the Young Men's Christian Association Training School, in Springfield, Mass., suggested, as an

exercise of inventiveness, a game that would comply with certain conditions. One of his pupils, James Naismith, taking note of the hypothetical conditions indoors —limited area, limited number of contestants, equally applicable to either sex, etc. — applied his mind to meet those conditions, and invented "basket-ball." It is played on a marked oblong square containing not more than 3,500 feet of actual playing-space, by teams of five each, known respectively as centre, left and right forwards, and left and right backs. The ball is round and inflated, not less than 30 or more than 32 inches in circumference, and very like that with which "Association" foot-ball is played. The goals are hammock nets of cord, suspended from metal rings 18 inches in diameter, and placed 10 feet from the ground, in the centre of the ends of the playing-space. The time of playing, for seniors, is two halves of 20 minutes, with an interval of 10 minutes; and for juniors, two halves of 15 minutes, with a similar interval. No kicking of the ball with the foot, or hitting with the fists, is permitted; the ball must be held by the hands only. Consult Naismith and Gulick, 'Basket Ball'; 'Spalding's Athletic Library' (New York 1894); Fisher, H. A. (ed.), *Official Collegiate Basket Ball Guide* ('Spalding's Athletic Library,' New York, annual); Smith, T. H., *Official Basket Ball Guide* (Fox's 'Athletic Library,' New York 1906).

**BASKET-FISH,** a name given about 1670 by John Winthrop, governor of Connecticut, to the *Astrophyton agassizii*. It belongs to the group *Euryalida*, and is allied to the sand-stars, but differs in the arms being much branched and ending in long, slender tendrils which are so much interlaced as to suggest basket-work. It is very large, the disc being two inches across, and the entire animal often a foot in diameter. It lives off the coast of New England in from 10 to 100 fathoms of water. Other names are "Medusa's-head" and "Sea-basket."

**BASKET-WORM.** See BAG-WORM.

**BASKETT, James Newton,** American zoologist and novelist: b. Nicholas County, Ky., 1 Nov. 1849. He was graduated Ph.B. at University of Missouri 1872, and M.A. in 1893. Later he became well known as a civil engineer and historian, and as the author of accounts of Spanish expeditions in the south and southwest of early dates. His papers include the 'Route of Cabeza de Vaca' (Texas Historical Society); 'Route of Coronado to Quivira' (Report Kansas Historical Society); and of numerous contributions in journals and magazines bearing on natural history. He has been a special student of the divining rod and other subconscious endowments, is a lecturer on many subjects, especially birds, and the author of 'The Story of the Birds' (1896); 'The Story of the Fishes' (1899); 'The Story of the Reptiles and Amphibians' (1902); 'At You-All's House' (1898); 'As the Light Led' (1900); 'Sweetbrier and Thistledown' (1902).

**BASKING-FISH, or BASKING-SHARK.** See SHARK.

**BASLE.** See BASEL.

**BASNAGE,** bä-näzh, a family of French Protestants, remarkable for the number of able men and eminent writers whom it has produced. 1. NICOLAS, who, having espoused the doctrines of the Reformation, was compelled by persecution to take refuge in England, where he became the minister of a congregation at Norwich. When, by the accession of Henry IV, a better era began to dawn, he returned to his country and officiated, till his death, as minister of a church at Carentan. 2. BENJAMIN, son of the former: b. 1580; d. 1652. He succeeded his father in his charge, and held it for the long period of 51 years. He long held a prominent place among the reformers of France; presided in the assembly held at Rochelle in 1622; undertook the dangerous task of negotiating for English aid; traveled into Scotland to arouse the Protestant feeling in that country; and on his return took the lead in the important synods held at Charenton in 1623 and 1631, and at Alençon in 1637. His principal work, entitled 'Treatise on the Church,' is a good specimen of his talents. 3. HENRI DE FRANQUENAY: b. 1615; d. 1695. He was the youngest son of Benjamin, studied for the bar, and as a provincial advocate in Rouen long stood at the head of his profession. His eloquence, learning and unsullied integrity secured him the esteem, not only of the Protestants, whose views he held, but even of those most violently opposed to him. His complete works, confined to juridical subjects, were published at Rouen in two volumes, folio, in 1778. 4. JACQUES, eldest son of Henri: b. Rouen 1653; d. 1723. He is the best-known and perhaps the ablest member of the family. He studied theology at Geneva and Sedan, and in 1676 became minister of the Protestant Church at Rouen. In 1685 his church having been closed by decree of Louis XIV, he removed to Holland and officiated as minister, first at Rotterdam, and then permanently at The Hague. Among his works may be mentioned 'History of the Church,' 2 vols., folio; 'History of the Jews,' 15 vols., 12mo.; 'Annals of the United Provinces,' 2 vols., folio; and 'The Holy Communion.'

**BASQUE PROVINCES** (Spanish Provincias Vascongadas), in northeastern Spain, the three provinces of Alava, Viscaya (Biscay) and Guipúzcoa. These will be found under their separate headings. The total area is 2,739 square miles, and the total population was estimated (31 Dec. 1914) at 706,249. Lying on the northern versant of the Cantabrian Mountains, these provinces present a reasonable contrast to the arid table-land of Castile, being covered with green all the year round. Bears, chamois, capercailzie and hazel-grouse abound in the waving forests of oak, birch, ash and beech trees; there are great chestnut and walnut groves, bountiful orchards, vineyards and luxuriant meadows alternating with fields of maize, rye, potatoes, flax and hemp. Salmon and trout streams race through the verdant mountain glens; from Corunna to the Bidassoa, on the French frontier, the country is dotted with isolated farmsteads, villages consisting of little else besides a church and a tavern, the rest of the houses scattered over a wide area. Though tolerably straight and uniform, the north coast is broken by several small harbors, where much commerce is carried on in small vessels. The Basque provinces are the centre of the iron mining district of Spain, where the

most active extraction of this metal is in progress, nearly 6,000,000 tons being produced annually. In the province of Guipúzcoa is the village of Loyola, the birthplace (1491) of Inigo Lopez de Recalde, who became famous as the founder of the Jesuit order under the name of Ignatius of Loyola. In that village, also, the Basques have their sacred tree called the "Guarnica," the emblem of their liberties. See BASQUES.

**BASQUES**, bäsks, or **BISCAYANS**, in their own language, EUSCALDUNAC; the Spaniards call them "Vascongados." A remarkable, very ancient race inhabiting both sides of the Pyrenees, the southwest corner of France and the north of Spain. They represent the remnant of a people once spread over the whole of the Iberian Peninsula and southern Gaul in prehistoric times. They are probably the descendants of the ancient Iberi, who occupied Spain before the Celts, though this is by no means a decided point among ethnologists. From the early dawn of history they constituted small republics, ruled by duly elected chiefs and according to special codes (fueros), breathing fierce independence, parochial exclusiveness and stern but patriarchal regulations. The French Basques (Gascons) settled on the north side of the Pyrenees about the end of the 6th century, between the mountains and the Garonne. Under the Carlovingians they elected their own dukes, but after the extinction of that family they fell under the dominion of Aquitania in the 11th century. In 1106 they purchased the Labourd for 3,306 gold florins, and were incorporated with it under France in 1453, by Charles VII, but continued to enjoy certain exemptions from taxes, enlistment in the army, etc. Their number is estimated at about 150,000. The ultramontane Basques have not played any important part in Spanish history. Their distinct national code has been respected at all times and by every ruler, forming a kind of *imperium in imperio* with their special parliament, *Disputacion Provincial,* tariffs, tolls, and, until recent years, even their own army and police. After the close of the second Carlist war in 1876 the powers and privileges of the Basque *Disputaciones* were considerably curtailed by the Spanish government, though the provinces retained entire control of their municipal affairs. They collect their own taxes and pay an annual tribute to Spain, the amount of which is fixed periodically and generally for 20 years in advance. The tribute for the years 1915–16 was fixed at 9,000,000 pesetas ($1,800,000), while the province of Guipúzcoa contributes an additional tax of 700,000 pesetas ($120,000). The Basques preserve their ancient language, former manners and customs and their national dances. The rhythm of their music differs altogether from that of other parts of Spain; it possesses its own essential characteristics, so pronounced that none in Spain can imitate it and few outside can understand. Their national anthem, the "Guarnica," named after their sacred tree in Loyola, is said to be capable of rousing the Basque to a fierce degree of patriotism. They make admirable soldiers, especially in guerrilla warfare, to which their native temperament inclines. They furnish a prescribed quota of recruits to the Spanish army annually. The people of the Basque provinces and Navarre were the strongest supporters of the pretender, Don Carlos, and supplied the best leaders in the Carlist wars. In personal appearance the Basques are of medium size, active and athletic; of fair complexion in general, they bear some resemblance to certain Tartar tribes of the Caucasus. They are faithful and honest, kind and hospitable to strangers. Their mental equipment is said to be somewhat dull, though illiteracy is comparatively rare among them. In his "Bible in Spain" George Borrow tells us that no people on earth are prouder than the Basques, "but theirs is a kind of republican pride." They have no nobility amongst them, and no one will acknowledge a superior. They are good seamen, and were the first Europeans who engaged in the whale fishery, when whales were plentiful in the Bay of Biscay.

The Basques are the "mystery people" of Europe; much controversy has raged around the question of their origin. The Romans mention a tribe called "Vascones," who lived somewhere in the present Basque provinces. Gascones is the same word, the letters b and g being often interchanged. Not all the Basque-speaking people are Basques. The old Gascones and the present Béarnais speak a Basque dialect, but they differ widely from the Spanish Basques. These French people have dark curly hair and brown eyes; they are round-headed and short of stature, whereas the true Basques are long-headed and short-faced, with light hair, and generally blue or gray eyes. They are also taller and high-shouldered. Borrow decided that the Basques were of Mongolian origin. He discovered many Sanskrit roots in their language, but was "inclined to rank the Basque rather amongst the Tartar than the Sanskrit dialects." Modern scientists, however, have completely discarded Borrow's theory, and not a few have sought to place the cradle of the Basque race in northern and northeastern Africa, from the similarity of their language to the old Berber and Tuareg languages. In any case it is certain that Basque is neither an Aryan nor Indo-Germanic language; its affinities with Berberic point to Egypt and to Somaliland. On the other hand, the language of the old Mediterranean race also has affinities with Basque, and points eastward into Asia Minor. Our whole knowledge of the so-called Basque language being based entirely upon the living Basque dialects, it is probable that the mystery will long remain unsolved. According to some authorities it contains only about 40 foreign words, while others emphatically assert that more than half the words in the whole language are borrowed. The following stanza, "noted down from recitation" by George Borrow, may serve as an example of Basque poetry:

Ichasoa urac aundi,
Estu ondoric agueri —
Pasaco ninsaqueni andic
Maitea icustea gatic.

This means, "The waters of the sea are vast, and their bottom cannot be seen; but over them I will pass, that I may behold my love." As stated above, the Basques call themselves Euscaldunac: *eusk* = language, sound; *al* from *aldea* = part or side; *dun* = full of, plenty; *ac* = adjectival ending, the c being the sign of the plural. Thus the whole word signifies "those with a language." The language itself is called

«Euscara,» and the country Euscallerria, Euska-Herria or Eusquererria, from the word *erria*, land. The Spanish group of Basque dialects are the Guipúzcoan, upper Navarrese and Biscayan; the French group are the Labourdin, lower Navarrese and Souletin. See ALAVA; BISCAY; BASQUE PROVINCES; GUIPÚZCOA; NAVARRE; SPAIN.

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**BASRAH.** See BASSORA.

**BASS, Edward,** first Protestant Episcopal bishop of Massachusetts: b. Dorchester, Mass., 23 Nov. 1726; d. Newburyport, Mass., 10 Sept. 1803. He was graduated at Harvard in 1744; was ordained in England in 1752; and later became pastor of the church at Newburyport, Mass. During the Revolution he omitted from the church service all reference to the royal family and the British government. For this he was expelled from the Society for the Propagation of the Gospel. In 1797 he was consecrated bishop of Massachusetts, and finally also of New Hampshire and Rhode Island.

**BASS, Michael Thomas,** English brewer: b. 1799; d. 1884. He became head of the Burton brewing firm of Bass & Company upon the death of his father and was a member of Parliament from 1848 to 1883. His benefactions were very numerous, and included the building and endowing of Saint Paul's Church, Burton (the total expenditure on the parish being about $500,000); and the establishment of recreation grounds, a free library, and swimming baths for Derby, at a cost of $185,000. Of simple tastes, he more than once declined a baronetcy and a peerage.

**BASS,** bās (It. *basso,* deep, low), (1) the lowest male voice, with the average compass of from F to F two octaves above; deep basses exceed this limit downwards and high ones reach higher notes; (2) the lowest part in the harmony of a musical composition. It is the most important of all the parts, the foundation of the harmony, and the support of the whole composition. Different forms of bass are: *Basso concertante,* or *Basso recitante,* the bass of the little chorus; the bass which accompanies the softer parts of a composition, as well as those which employ the whole power of the band. This part is generally taken by the violoncellos. *Bass-counter* or *contra-bass,* the under bass; that part which, when there are two basses in a composition, is performed by the double basses, the violoncellos taking the upper bass or *basso concertante. Basso ripieno* (It.), the bass of the grand chorus; that bass which joins in the full parts of a composition, and, by its depth of tone and energy of stroke, affords a powerful contrast to the lighter and softer passages or movements. *Figured bass,* a bass which, while a certain chord or harmony is continued by the parts above, moves in notes of the same harmony. *Fundamental bass,* that bass which forms the tone or natural foundation of the harmony, and from which that harmony is derived. *Ground bass,* a bass which starts with some subject of its own, and continues to be repeated throughout the movement, while the upper part or parts pursue a separate air and supply the harmony. *Thorough bass,* the system in which words are denoted by placing figures over the bass note. *Bass clef,* the character put at the beginning of the stave, in which the bass or lower notes of the composition are placed, and serving to determine the pitch and names of those notes.

**BASS,** the name of various trimly shaped, active, gamy fishes of both fresh and salt water, mostly in northern regions. The term was originally applied to the *Morone labrax* of the west coast of Europe, and was thence transferred to many other fishes having a real or fancied likeness to this in appearance and qualities. This fish represents the sea-perch family, *Serranidæ,* is perch-like in form, usually 12 to 18 inches long, and frequents the shoal shorewaters in great numbers, being noted for its fierceness and voracity. Its flesh is excellent. The same family and genus are represented in North America by many species, of which the nearest relative is the yellow bass (*M. interrupta*) of the southern Mississippi Valley. It is a brassy-yellow with seven very distinct black longitudinal lines, those below the lateral line being interrupted posteriorly, the posterior parts alternating with the anterior. Its body is oblong-ovate with the back much arched. The dorsal fin and anal spines are stout. It is a light fish for its length, ordinarily weighing one to two pounds, but often measuring 12 to 18 inches, and weighing five pounds. It is very game, and is esteemed by some anglers the equal of the black bass in this respect.

In the same family falls the well-known striped bass or «rock fish» (*Roccus lineatus*), of the northeastern Atlantic, which approaches the coast and enters fresh water only at spawning-time when it ascends the rivers. It was absent from the Pacific coast until planted there artificially, since which it has multiplied from Puget Sound to Lower California. The largest fish are to be found in Chesapeake Bay, where they average from 30 to 50 pounds in weight, and occasionally reach double that. In color they are brassy-olive, the fins and sides rather pale, and the latter marked with seven or eight blackish stripes. The favorite way of fishing for the striped bass is by casting a «squid» through the surf, using as a bait pieces of clam, shrimp or crab; but they will rise to a fly; and on the Pacific coast are easily lured by a shining spoon-bait.

The white bass (*R. chrysops*) is a near relative of the striped bass, and inhabits the Great Lakes from the Saint Lawrence to Manitoba, and southward in the Mississippi Valley to Arkansas. Its preference is for still waters, and it is even lighter in weight for length than the yellow bass. It is generally taken with bait, though it will rise to the fly. It is silvery in its color, tinged with golden below, with dusky lines along the sides.

The most important of the American freshwater bass are the black bass — two species of percoid game fishes of the distinctly American family *Centrarchidæ,* which also contains the various sunfish (q.v.). One is the «big-mouthed» and the other the «small-mouthed» black bass. Both were originally confined to

the waters of the upper Mississippi Valley, and Great Lakes region, but in 1853 they were introduced into the head waters of the Potomac River, whence they have spread into all the rivers that empty into Chesapeake Bay. More recently bass have been introduced into New England and into many of the far Western States; as well as transported into England, France, Germany and other countries. The body is oblong, compressed, the back not much elevated, head oblong-conic, lower jaw prominent, teeth on jaws, vomer and platines in broad villiform bands, the inner depressible, usually no teeth or tongue. Black bass vary greatly in size in different waters. The small-mouthed, however, seldom exceeds six pounds in weight, while the large-mouthed, especially in the South, is larger, running as high as 14 pounds. In color both are dull golden-green with a bronze lustre, the scales on the cheeks are more minute than those on the body, and the dorsal fin is deeply notched. In the small-mouthed species (*Micropterus dolomieu*) the maxillary does not extend beyond the eye, and the scales on the cheek are arranged in 17 rows. In the large-mouthed (*M. salmoides*) the maxillary extends beyond the eye and there are but 10 rows of scales on the cheeks. The lateral line in both is nearly straight, passing from the upper edge of the gill-cover to the centre of the base of the caudal fin. The small-mouthed has the wider range, extending from the Red River of the North to Texas and Mexico. Both varieties are free, but capricious, biters, and both are game fighters. They are taken with artificial flies, such as the "Rube Wood," "Seth Green," "silver doctor," and "Parmachenee bell," as well as by casting with a wide range of natural baits, such as crayfish, minnows, worms and small frogs; or they may be taken by trolling from a boat, using a stiff rod, especially in lakes, with any standard silver or golden spoon-bait. In some districts the large-mouthed bass is called "straw" bass; in others "slough," "lake," "marsh," or "Oswego" bass, or "green trout," "welchman," etc.

Another species deserving mention is the "rock-bass," one of the sunfish (*Ambloplites rupestris*), found in practically every lake, pond and stream east of the dry plains. It does not usually attain more than half a pound in weight, is easily caught and is the least persistent fighter of any of the family. In color it is mottled-olive or brassy-green. Consult Henshall, 'Book of the Bass' (1889); and Jordan and Evermann, 'American Food and Game Fishes' (New York 1902).

**BASS, Culture of.** The artificial culture of American bass is of recent growth, owing principally to ignorance of the proper methods. Considerable pond-space is required, certainty that the water is clean and that the temperature is not likely to fall much below 60° F. during the spawning season. Bass will not spawn in water colder than 50°. A good pond an acre in extent ought to yield 50,000 to 75,000 young fish; four or five acres is about the limit in size. Every pond should be of even depth (about three feet) over the greater part, with a deep place (the "kettle") near the outlet; on the shallow "shelf" the fish will nest and may be hatched and cared for. This main, or "brood" pond, should contain aquatic plants. In addition there should be many separate small shallow "fry ponds" for the segregation and rearing of young fish sorted according to age. Wild stock of the large-mouthed black bass may be caught and introduced at any time of the year; but the small-mouthed breeding-stock (to which most of what is to be said applies) must be introduced only in the autumn. They are then supplied from day to day with minnows and crayfish, and also are gradually accustomed to take chopped beef, liver and lungs or other food, but this artificial feeding must be artfully done or it will not succeed.

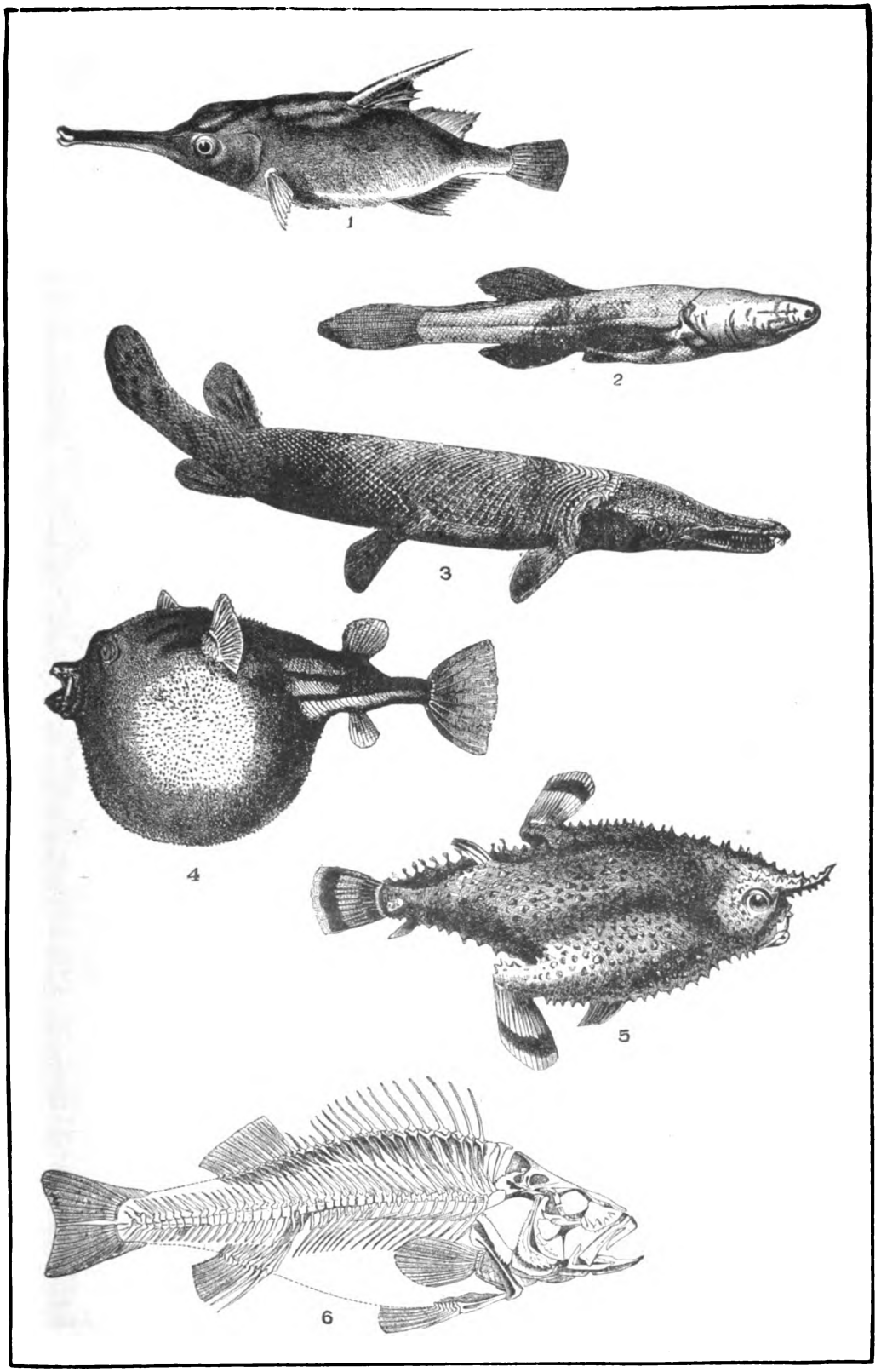
Bass lay their eggs in May in saucer-like nests constructed of pebbles on the bottom of ponds. These nests are made and kept clean by the male fish, until he can induce a gravid female to deposit her eggs therein. They are then kept clean and guarded until they hatch. When hatching the young cluster on the nest in a compact mass, but soon begin to rise toward the surface, and at last the male, which has theretofore herded and protected them, drives them into a jungle of water-weeds and abandons them to their fate. They then become the prey not only of every other bass or perch in the pond, but the smaller are killed and eaten by the larger among themselves. Hence very few reach maturity. To avoid this, breeders of small-mouthed bass furnish the pond with a large number of artificial nests, consisting of shallow, open boxes half-filled with sand and pebbles. These are occupied and arranged as nests by the fish. When the fry appear a "crib" consisting of a framework of iron, covered with cheese-cloth, sufficiently large to enclose the nest-box, and tall enough to reach a little above the surface of the water, is set around the nest and firmly anchored. The next-box is then lifted out, and the fry left to grow within the crib, safe from molestation. Such cribs are also placed around any natural nests found in the pond. These young fish are fed until they have absorbed the yolk-sac, and then are captured in scoop-nests and transferred to the proper fry-pond. Artificial nests are not used for the hardier and slower large-mouthed bass, but cribs may be placed around their natural nests.

Success in bass-culture depends on a good site and good water for the ponds; but even more on the proper care and feeding of the young. Full directions in both these particulars are to be found in W. E. Meehan's, 'Fish-Culture in Ponds' (New York 1913).

ERNEST INGERSOLL.

**BASS** (bȧs) **ROCK**, a remarkable trap-rock island, at the mouth of the Firth of Forth, three miles from North Berwick. It is of circular shape, about a mile in circumference, and rises precipitously to a height of 350 feet. It is inaccessible except on one flat shelving point on the southeast. Its summit is estimated at about seven acres, and this supports a few sheep, the mutton of which is considered a great delicacy. Solan geese and other sea-fowl in myriads cover its rocks, and fly around it in clouds. The surrounding water is of great depth on the northeast, but shallow on the south. Among the historical ruins on the island are the remains of a fortalice commanding the landing-place, capable of accommodating upward of 100 men, formerly accessible only by ladders or buckets and chains; and the ruins of a chapel about halfway up the acclivity.

## BASS, BAT FISH, BALLOON FISH, ETC.




1 Bellows Fish (Centriscus scolopax)
2 Cave Fish (Amblyopsis spelæus)
3 Bill Fish (Lepidosteus osseus)
4 Balloon Fish (Tetrodon fahaka)
5 Bat Fish (Malthe vespertilio)
6 Skeleton of a Bass (Perca fluviatilis)

The Bass was purchased by the English government in 1671, and its castle, long since demolished, was converted into a state prison in which several eminent Covenanters were confined. It was the last place in Britain that held out against William III, its small band of gallant defenders yielding only to starvation. The island anciently belonged to a family of the name of Lauder, whose head was styled Lauder of the Bass.

**BASS STRAIT,** a channel beset with islands, which separates Australia from Tasmania, 120 miles broad, discovered by George Bass, a surgeon in the British navy, in 1798.

**BASS** (bās) **VIOL,** a stringed instrument resembling the violin in form, but much larger. It has four strings and eight stops, which are subdivided into semi-stops, and is played with a bow. See VIOL.

**BASSANIO,** bă-sā'nĕ-ō, the lover of Portia in Shakespeare's 'Merchant of Venice.'

**BASSANO, Hugues Bernard Maret, Duc de,** French publicist and statesman: b. Dijon 1763; d. 1839. On the first outburst of the French Revolution he enthusiastically embraced its principles, published the *Bulletin de l'Assemblée,* and soon after was appointed editor of the *Moniteur.* He became acquainted with Bonaparte, and was made by him chief of division in the Ministry of Foreign Affairs. In 1811 he was created Duke of Bassano and appointed Minister of Foreign Affairs; and in 1812 he conducted and signed the treaties between France, Austria and Prussia, preparatory to the fatal expedition to Russia. When the Emperor was sent to Elba in 1814, Bassano retired from public life; but immediately after Napoleon's return he joined him, and was very nearly taken prisoner at Waterloo. On the Emperor's final overthrow Bassano was banished from France, but at the Revolution of July 1830 he was recalled and restored to all his honors. In 1838 he was made Minister of the Interior and president of the council, but the ministry of which he formed a part survived only three days.

**BASSANO, Jacopo,** (real name GIACOMO DA PONTE), Italian painter: b. Bassano (whence his surname) 1510; d. 1592. He painted historical pieces, landscapes, flowers and portraits; among the latter those of the Doge of Venice, of Ariosto, Tasso and other persons of eminence. Several of his best works are in the churches of Bassano, Venice, Vicenza and other towns of Italy. He left four sons, all painters, of whom Francesco was the most distinguished.

**BASSANO,** bäs-sä'-nō, Italy, city in the province of Vicenza, on the Brenta, 30 miles north of Padua (long. 11° 43′ E.; lat. 45° 46′ N.). Its 30 churches contain beautiful paintings. A stone bridge, 182 feet long, unites the town with the large village Vincantino. Vines and olives are cultivated in the vicinity and there is considerable trade in silk, cloth and leather, oil, wine and asparagus. Its principal manufactures are straw hats, porcelain and wax. Napoleon made Bassano a duchy, with 50,000 francs yearly income, and granted it to his Minister of Foreign Affairs, Maret (see BASSANO, HUGUES). Near Bassano, 8 Sept. 1796, Bonaparte defeated the Austrian general Wurmser. Bassano was the birthplace of the famous printer Mauritius, as well as of the historical painter Giacomo da Ponte (see BASSANO, JACOPO), and a short distance away lies the village of Possagus, the birthplace of Canova. In the Austro-German invasion of north Italy in November-December 1917, Bassano was in imminent danger for a few days, the enemy driving on it from the north and east. The timely arrival of Anglo-French troops improved the shattered morale of the Italians and the Teutonic hosts were halted at the Piave, less than 15 miles distant. See WAR, EUROPEAN. Pop. (1911) 17,130.

**BASSEIN,** bäs-sān', India, a decayed town in the presidency of Bombay, at the south end of a small island of the same name, 28 miles north of Bombay, and separated from the island of Salsette by a narrow channel. It was fortified by the Portuguese in 1536, and remained in their possession until captured by the Mahrattas in 1739. During this period it rose to be a fine and wealthy city of over 60,000 inhabitants, with many stately buildings, including a cathedral, 5 convents, 13 churches and handsome private residences. Through war, plague and other causes it has decayed until its population had dwindled to 9,598 in 1911. It still exports considerable quantities of rice.

**BASSEIN,** Burma, town in the Irrawaddy division on the left bank of the Bassein River, one of the mouths of the Irrawaddy, with a suburb on the right bank; lat. 16° 46′ N.; long. 94° 48′ E. The English fort with the courthouses, treasury, police-office, etc., are on the left bank. In the suburb on the right bank are the rice-mills and store-yards of the principal merchants. Its inland water connection and the opening of a railway in 1903 have enhanced its importance as a centre of commerce. The river is navigable up to the town for ships of the largest burden, and there is a considerable trade in exporting large quantities of rice, and importing coal, salt, cottons, etc. The place is of military importance also, as it commands the navigation of the river. It was captured by the British in 1852. It is the seat of a consul of the United States. Pop. 37,081.

**BASSELIN,** bäs-lăn, or **BACHELIN,** băsh-lăn, **Oliver,** French poet: b. Val- de-Vire, Normandy, about 1350; d. about 1419. It has been asserted that the vocabulary of theatrical and poetical literature is indebted to him for the word "vaudeville." He seems to have been a cloth-fuller or presser, much given to versified narration and iteration of convivial themes in rhymed fragments dubbed *vaux-de-vire* in honor of the poet's birthplace. In the 'Book of New Songs and Vaux-de-Vire' (1610) appears a collection of these bacchanalian stanzas, the most touching of which is addressed by the singer 'To My Nose,' the rubescence thereof being tastefully and exquisitely celebrated.

**BASSES-ALPES,** bäs-ālp ("lower Alps"), a department of France, on the Italian border. See ALPS.

**BASSES-PYRÉNÉES,** bäs-pē-rā-nā ("lower Pyrenees"), a French department bordering on Spain and the Bay of Biscay. See PYRENEES.

**BASSET,** a game of cards, formerly much played, especially in France. It is very similar to the modern faro. Severe edicts were issued against it by Louis XIV, and it was afterward

played under the name of *pour et contre*. De Moivre, in his 'Doctrine of Chances,' has calculated many problems connected with this game.

**BASSET-HORN**, a wooden wind-instrument (called also *Cornet* by reason of its curvature), believed to have been invented in Passau in 1770. It was afterward perfected by Theodore Lotz in Presburg. It is, properly considered, an enlarged clarinet; and, notwithstanding the difference of its form, it resembles that, not only in its qualities and tone, but also as regards its intonation, the mode of holding it and fingering; so that every clarinet player can perform on it. Besides the mouthpiece it is formed of five pieces — the head-piece, two middle pieces, the trunk and the bell, the last of which is usually of brass. It differs from the clarinet chiefly in having four additional low keys worked by the thumb of the right hand. Its compass is three and a half octaves, from lower F in the bass to double C of the treble.

**BASSET-HOUND**, a dog with many hound-like characteristics, somewhat used for rabbit-hunting, clumsy in shape, and allied to the dachshund (q.v.). Its head is as massive and solemn-looking as that of a bloodhound, which it also resembles in the length of its ears. Its body is as bulky as that of a foxhound, to which it is also similar as regards color, hair and form, save that its fore legs are but four inches high and crooked at the knee. Below this point is a wrinkled ankle terminating in a massive paw, each toe of which stands out distinctly. Its coat is short, smooth and fine, with the gloss of a thoroughbred race-horse; and its colors are black and white and tan. In weight it varies from 40 to 45 pounds. It is probably of French origin.

**BASSETERRE**, bäs-tãr, West Indies, the name of two towns. (1) The capital of the British West Indian island of Saint Christopher's, a seaport situated at the mouth of a small river, on the south side of the island, and on the edge of the fertile vale of Basseterre, a tract yielding rich crops of sugar and fruits. The town was destroyed by fire in 1867, but has been rebuilt with better houses and wider streets than before. It is a place of considerable commercial importance, with a population of about 8,000. (2) The capital of the French West Indian island of Guadaloupe, situated near the south end of the island, and consisting of one principal long street stretching along the seashore. It is defended by Forts Royal and Matilda. The anchorage is unsheltered and exposed to a constant swell. Pop. about 8,000.

**BASSETT, James**, American missionary: b. Hamilton, Canada, 31 Jan. 1834; d. 1906. He was graduated at Wabash College 1856, and at Lane Theological Seminary 1859; was chaplain in the Union army 1862–63; and later pastor of Presbyterian churches in Newark and Englewood, N. J. In 1871 he went to Persia as a missionary, and in a short time acquired such a familiarity with the language that he composed a volume of hymns in Persian ('Teheran,' 1875, 1884). Other of his writings are 'Among the Turcomans' (contributed to the 'Leisure Hour,' 1879–80); 'Note on the Simnuni Dialects' ('Journal of the Royal Asiatic Society,' 1884); 'Persia, the Land of the Imâms' (1886).

**BASSETT, John Spencer**, American historian: b. Tarboro, N. C., 18 Sept. 1867. He was graduated from Trinity College, Durham, N. C., in 1888, and took the degree of Ph.D. at Johns Hopkins University in 1894; was appointed professor of history at the first named institution in 1893 and in 1906 became professor of history at Smith College. His writings relate chiefly to North Carolina history and comprise 'Constitutional Beginnings of North Carolina 1633–1720' (1894); 'Slavery and Servitude in the Colony of North Carolina' (1899); 'Anti-Slavery Leaders of North Carolina'; 'Slavery in the State of North Carolina'; 'The War of the Regulation'; 'The Federalist System' (1906); Life of Andrew Jackson' (2 vols., 1911); 'A Short History of the United States' (1913); 'The Plain Story of American History' (1916). These works are nearly all included in the 'Johns Hopkins University Studies in Historical and Political Science.' 'The Middle Group of American Historians' (New York 1916).

**BASSI**, bäs'sē, **Laura Maria Caterina**, Italian philosopher: b. Bologna, 29 Oct. 1711; d. 20 Feb. 1778. She received a doctor's degree as an acknowledgment of her attainments, and delivered public lectures on experimental philosophy. She also lectured in the Philosophical College, where she was appointed professor. Her correspondence with the most eminent scholars of Europe was very extensive. She married Giuseppe Verrati in 1738 and had several children.

**BASSI**, bäs'sē, **Ugo**, Barnabite monk, and distinguished Italian patriot: b. 1804 at Cento, in the Roman states, of an Italian father and Greek mother. He was much distinguished among the brethren for his extraordinary learning and talents. The liberality of his political opinions, however, rendered him obnoxious to the papal court, and he was sent into exile in Sicily, from which he returned on the accession of Pius IX in 1846. On the breaking out of the Lombard revolution in 1848 he greatly distinguished himself by his valor in battle and his untiring services in the hospitals. On the capitulation of Treviso he went to Venice, where he fought in the ranks against her Austrian besiegers. Thence he went to Rome and joined Garibaldi's legion as chaplain. On the fall of Rome he was one of those who followed Garibaldi when he made a last attempt to fight his way to Venice, which still held out against the Austrians. The little band was, however, dispersed and cut up by Austrian troops, and Garibaldi himself escaped with great difficulty. Bassi was taken prisoner, carried to Bologna and condemned to death 18 Aug. 1849. He was the author of a work on 'The Church After the Image of Christ,' and an unfinished poem called 'Constantine, or the Triumph of the Cross.' His talents were universal. He was an accomplished musician and composer, wrote his own language in remarkable perfection, and was a perfect master of Greek, Latin, English and French. He was equally remarkable for his personal beauty and his eloquence as an *improvisatore*, while his memory was so prodigious that he is said to have been capable

of reciting the whole of Dante's 'Divina Commedia.'

**BASSOMPIERRE**, bä-sôn-pē-ār, **François** (frāṅ-swär) **de**, marshal of France, one of the most distinguished men of the courts of Henry IV and Louis XIII, descended from a branch of the house of Clèves: b. Lorraine 1579; d. 1646. In his youth he studied philosophy, jurisprudence, medicine and the military art. After traveling through Italy he appeared at the court of Henry IV, where his taste for splendor, play and gallantry soon made him conspicuous. In 1600 he made his first campaign against the Duke of Savoy, and fought with equal distinction in the following year against the Turks. His love of France soon called him back; he aspired to the hand of the daughter of the Constable de Montmorency, whose charms had excited the most violent passion in Henry IV. Bassompierre yielded to the solicitations of his King and renounced his intended union with her. In 1622 Louis XIII appointed him marshal of France, and became so much attached to him that Luynes, the declared favorite, alarmed at his growing influence, insisted upon his removal from court. Bassompierre therefore accepted an embassy, and held this position successively in Spain, Switzerland and England. After his return he entered again into the military service and was present at the siege of Rochelle and Montauban. Cardinal Richelieu, who soon after obtained entire control of the King and the country, feared the boldness of Bassompierre and his secret connection with the house of Lorraine; and the machinations of the latter served him as a pretext for sending Bassompierre, in 1631, to the Bastille, from which he was not released till 1643, after the death of the cardinal. During his detention he occupied himself with his memoirs (first published at Cologne 1665; and Paris 1877); and the history of his embassies in Spain, Switzerland and England, which sheds much light on the events of that time.

**BASSOON**, a wooden reed instrument which forms the natural bass to the oboe, serving as a continuation of its scale downward. The reed is fixed to a crooked mouthpiece issuing from the side of the bassoon. The holes are partly closed by the fingers, partly by means of keys. It was formerly used as an accompaniment to the oboe, but it is now so far improved with keys as to be susceptible of being played solo. Its compass is more than three octaves, from low B flat to A flat in the treble; but its scale is complicated, and much depends upon the player and even upon the individual instrument. It consists of four tubes (besides the mouthpiece); bound together somewhat like a fagot. Hence the Italians term it *fagotto*, and from them the Germans *fagott*. It forms, when put together, a continuous tube nearly eight feet long, but as the bore is bent abruptly back on itself its height is only about four feet. In music designed for wind-instruments it often forms the bass. It is capable of very fine and also grotesque effects, and has been much employed by some of the best composers, sometimes as a tenor or even alto instrument.

**BASSORA**, bäs-sō'rä, or **BASRAH**, bäs'rä, Turkey in Asia, a city situated between two and three miles on the west side of and on a navigable canal leading about two miles from the Shat-el-Arab, as the united stream of the Tigris and Euphrates is called, about half way between the Persian Gulf and the junction of the two rivers. Merchants from Arabia, Turkey, Armenia and Greece, also Jews and Indians, reside here, and it is the station of a United States consul. The Arabs are more numerous than the Turks, and their language is chiefly spoken. The city is surrounded by a wall about 10 miles in circuit, 20 to 25 feet thick. The houses are generally mean, partly constructed of clay, and the bazaars are miserable edifices. A considerable trade is carried on. Mail steamers run between Bombay and Bassora, and there are also other steamers trading here. Dates form the principal export; camels and horses, galls, gum, carpets, wool and wheat are also exported; total exports over $5,000,000 annually. The imports are coffee, rice, spices, textiles, etc. The trade of the interior is conducted by means of caravans. The town is dirty and unhealthy; the environs are very fertile. The modern Bassora arose in the 17th century, and does not occupy the site of the older town, whose ruins lie about nine miles southwest of it. Turkey entered the war 1 Nov. 1914, and on the 5th Great Britain declared war. A contingent of English and native troops sent by the government of India were already waiting in the Persian Gulf. On 7 November the British landed at Fao, on the Shatt-el-Arab, and occupied the village. Sailing 30 miles farther up the estuary they disembarked at Sanijeh, occupied that place and Sahain, and encountered the main Turkish force at Sahil, 14 miles from Basrah, on 17 November. The Turks were routed in a short battle with heavy loss, and on 23 Nov. 1914 the British entered Basrah unopposed. See WAR, EUROPEAN: TURKISH CAMPAIGN. Pop. about 80,000. The vilayet of Bassora has an area of 53,580 square miles, and a population of about 600,000.

**BASSORA GUM**, a gum brought from Bassora; supposed to be derived either from a cactus or a mesembryanthemum.

**BASSORIN**, a kind of mucilage found in gum tragacanth (sometimes called adraganthin), which forms a jelly with water but does not dissolve in it. A clear, aqueous-looking liquid, apparently of the nature of Bassorin, exists in the large cells of the tubercular roots of some terrestrial orchids of the section *Ophyreæ*. It is formed of minute cells, each with its cytoblast; the whole being compactly aggregated in the interior of the parent cell.

**BASSVILLE**, bäs-vēl, **Nicolas Jean Hugon de**, French journalist and diplomatist. As editor of the *Mercure National* he attracted attention to himself and was appointed secretary to the legation at Naples in 1792. Soon after this he was despatched to Rome, where he was killed, in 1793, by the populace for attempting, under orders of the French government, to oblige all French residents to wear the tricolor cockade. The death of Bassville has furnished the subject for many compositions in both prose and verse, in French and Italian.

**BASSWOOD**, the American linden, or lime-tree (q.v.).

**BAST, or BASS,** the thin layer of fibrous tissue formed by, but outside the layer of, cambium (q.v.), or in popular phrase the inner bark of dicotyledonous shrubs and trees. Less frequently it occurs in the leaves and pith of dicotyledonous herbs and in the stems of certain monocotyledonous plants in which it is not easily distinguished from the wood. By extension the term is also applied to the phloem portion of the vascular system (q.v.) of flowering plants and ferns. For the plant, as well as for mercantile purposes, bast is highly important, for until it becomes changed into wood, it conducts the elaborated food from the green tissue to regions of use or storage. The bast cells are disposed and developed variously in different plants; occurring in rows, wreaths, more or less spread bundles, or single within the parenchyma. In some plants bast is formed but once, in others every year. Some fibres are simple, others branched; some primary, others secondary; some ever limber, and some change to wood. They are most developed toward the outside of the stem. While young they contain a granulary liquid, which disappears by the thickening of their walls. Young bast cells when treated by a solution of iodine and chloride of zinc become pale blue, the older ones violet, the full-grown pink. Thickened cells are plainly stratified, and their walls often become contiguous by the disappearance of the cavity. The walls exhibit various designs, spiral or other lines, more or less constantly, according to the species of the plant. By microscopical examination and chemical analysis the nature of the various fabrics made of bast may be determined. Thomson and F. Baur have thus demonstrated the sheets around Egyptian mummies to be of linen. The degree of contraction, of twisting, the length, density and form of the single cells of the bast vary in different plants. They are very long in flax, hemp, in some nettles, spurges, etc., very short in cinchona. Cotton consists of long hairs, and not of bast cells, which it very much resembles otherwise. The bast cells of monocotyledonous plants are mostly lignified. They conduct elaborated food but a short time, become filled with air and thus dead to the plant. The unlignified are very hygroscopic and often contain chlorophyll. No bast cell has pits, but the coniferæ have sieve pores or canals. The uses of bast are manifold. Flax bast is soft, flexible, seldom with swellings; hemp bast is very long, stiffer and thicker than flax, more stratified; nettle (*Urtica dioica*) bast resembles cotton, has swellings and is thicker than hemp. Branched and lignified bast cells of great beauty are found in the mangrove tree (*Rhizophora mangle*) and the secondary ones of *Abies pectinata*. Among the monocotyledonous bast fibres, those of the New Zealand flax (*Phormium tenax*) are the most remarkable, being formed in bundles near the margin of leaves. They resemble hemp, are very white, sometimes yellowish, very long, and contain much lignin, in consequence of which they are somewhat stiff, but very tough and fit for stout ropes. In palms a highly developed body of lignified bast surrounds the vascular bundles, while bast bundles are found also in the bark, leaves and interior of the stem. A similar disposition exists in the *Dracæna reflexa*, and in some *Aroideæ*. Everybody knows the tenacity of the bast of the lime tree, which is hence called bass-wood. The Chinese grass-cloth is made of *Boehmeria nivea* or *B. tenacissima*. Manila hemp comes from *Musa textilis;* rice bags are made in East India from *Antiaris toxicaria*. From the use of bast in ancient times for writing upon, the Latin name of bast, *liber*, has been applied to designate book. See also FIBRE; FLAX; HEMP; JUTE; RAMIE.

**BAST,** in Egyptian mythology, a goddess represented with the head of a cat or lioness. Bubastis, in Egypt, was the city where she held a high place, similar to that of Neith in Sais. Nearly a million Egyptians made annual pilgrimages to her shrine. Great numbers of bronze images of Bast were purchased in Bubastis.

**BASTAR,** a feudatory state of British India, joined with the Chanda district of the Central Provinces. It has an area of 13,062 square miles and a population (1911) of 433,310.

**BASTARD,** one begotten and born out of lawful wedlock, or born during wedlock where the husband was under the age of puberty, or where the husband had died at such a time that there was no possibility of his being the father, or where there was no possibility of access on the part of the husband on account of his absence from the country, or where the husband labored under a disability due to some natural infirmity.

The Romans distinguished two kinds of natural children — *nothi*, the issue of concubinage, and *spurii*, the children of prostitutes; the former could inherit from the mother, and were entitled to support from the father; the latter had no claims whatever to support. Both were often raised to all the rights of legitimate children by affiliation. The Athenians treated all bastards with extreme rigor. By the laws of Solon, they were denied the rights of citizenship, and a law of Pericles ordered the sale of 5,000 bastards as slaves. What rendered these regulations more severe was, that not only the issue of concubinage and adultery, but all children whose parents were not both Athenians, were considered bastards at Athens. Thus Themistocles, whose mother was a native of Halicarnassus, was deemed a bastard. The law, as might be expected, was often set aside by the influence of powerful citizens. Pericles himself had it repealed in favor of his son by Aspasia, after he had lost his legitimate children by the plague. The condition of bastards has been different in various periods of modern history. Among the Goths and Franks, they were permitted to inherit from the father. Thiery, the natural son of Clovis, inherited a share of his father's conquests. William the Conqueror, natural son of Robert I, Duke of Normandy, and of Arlette, daughter of a furrier of Falaise, inherited his father's dominions. He called himself *Willelmus, cognomento Batardus*. The celebrated Dunois styled himself, in his letters, the Bastard of Orleans. In Spain, bastards have always been capable of inheriting. The bastardy of Henry of Transtamare did not prevent his accession to the throne of Castile. In France, the condition of bastards was formerly very different in the different provinces. Since the Revolution, it has been regulated in a uniform manner by the general law of the kingdom. The *code*

*civil* thus fixes their rights: If the father or mother leave legitimate descendants, the bastard is entitled to one-third of the portion he would have inherited had he been a lawful child; if the father or mother die without descendants, but leave ascendants, or brothers or sisters, he is then entitled to one-half of such a portion; if the father or mother leave no ascendants or descendants, no brothers or sisters, he is entitled to three-quarters of such a portion; and if the father or mother leave no relations within the degrees of succession, he is entitled to the whole property. These regulations do not apply to the issue of an incestuous or adulterous connection.

By the common law of England, a child born after marriage, however soon, is legitimate, or at least he is presumed to be so; for one born in wedlock, and long enough after the marriage to admit of the period of gestation, may still be proved illegitimate, under some circumstances, and this is the general rule in the United States. According to the common law, a bastard is not the heir of any one; and, on the other hand, his only heirs are his children born in wedlock, and their descendants. According to the Roman law, one born out of wedlock might be legitimated by subsequent marriage and acknowledgment of his parents. In 1236 the English prelates proposed the introduction of the Roman law, in this respect, into England, to which the nobility made the celebrated reply, *Nolumus leges Angliæ mutare* (We are unwilling to change the laws of England). But that law exists in Scotland to-day, though not in England, Ireland or Wales. Consult Schouler, 'Treatise on the Law of Domestic Relations.' See ILLEGITIMACY.

**BASTARD BAR,** the ordinary name given to the heraldic mark used to indicate illegitimate descent. Properly speaking, it is not a bar at all, which is a band stretching horizontally across the shield, but a baton sinister; that is, it stretches diagonally across the shield in the direction of the sinister chief and the dexter base, but is couped or cut short at the ends, so as not to touch the corners of the shield. This circumstance serves to distinguish the bastard bar from the bend sinister, as well as the fact that the former is only one-fourth of the breadth of the latter. When belonging to the illegitimate descendants of royalty it may be of metal; but in other cases it must be of color, even when on another color. This mark in heraldry is of comparatively recent origin, bastards in earlier times not having been allowed to bear the arms of their fathers. It cannot be removed until three generations have borne it, and not even then unless replaced by some other mark assigned by the king of arms, or unless the coat is changed. Sometimes permission was granted to a bastard or one of his descendants to bear it dexter instead of sinister, although he was not allowed to cancel it altogether.

**BASTARD OF ORLEANS,** the name given to the natural son of Louis, brother of Charles VI of France, Jean Dunois: b. 1402; d. 1468. On account of his exploits in the Hundred Years' War he was created Count of Orleans.

**BASTARNAE,** the earliest Teutonic people mentioned in history. They migrated from the region of the Vistula to the lower Danube about 200 B.C. Consult Keane, 'Man: Past and Present' (1899).

**BASTIA,** Corsica, the former capital of the island, 98 miles northeast of Ajaccio by rail. It is badly built, has narrow streets, a strong citadel near the sea, two harbors, the new and the old, and a fine marine parade, adorned with a marble statue of Napoleon by Bartolini. The citadel and cathedral are noteworthy. Its public institutions are a lyceum, a library of over 30,000 volumes and fine collections of natural history. The inhabitants carry on a considerable trade in manufactured goods, hides, wines, tobacco, oil, wax candles, liquors and macaroni. Marble quarries, tanyards and dyeworks give employment to many operatives. It is an important trade centre and exports fruit, vegetables, minerals, fish. The stilettoes manufactured here are held in great esteem by the Italians. In 1745 Bastia was taken by the British, and in 1768 was united with France. On the new division of the French territories (1791) Bastia was made the capital of the department of Corsica, of which at present Ajaccio is the capital. Bastia is still, however, the commercial and industrial capital of the island and a United States consul is stationed here. Pop. 29,412.

**BASTIAN, Adolf,** German traveler and anthropologist: b. Bremen, 26 June 1826; d. 1905. He made extended journeys throughout Australia, Asia, America and west Africa at various periods of his career, and his explorations were carried on in such widely sundered countries as Yucatan, New Zealand and Persia. At the age of 70 he started on an exploring voyage to the Malay Archipelago. He was professor of ethnology in the University of Berlin, director of the Museum für Völkerkunde, and in 1901 became editor of the *Ethnographisches Notizblatt,* published in Berlin. His nearly 60 works deal with the various aspects of anthropology, his range being broad and his services in behalf of science of the greatest value. Among his many volumes may be named 'Der Mensch in der Geschichte' (1860); 'Ethnographische Forschungen' (1871–73); 'Der Buddhismus in seiner Psychologie' (1882); 'Der Fetisch an der Küste Guineas' (1884); 'Vorgeschichtliche Schöpfungslieder' (1893); 'Die Nikronesischen Kolonien' (1899–1900); 'Die Völkerkunde und der Völkerverkehr' (1900).

**BASTIAN, Henry Charlton,** English physician and biologist: b. Truro, 26 April 1837. He obtained the degree of M.A. in 1861 from the University of London, graduating subsequently in medicine at the same university. In 1866 was appointed lecturer on pathology and assistant physician in Saint Mary's Hospital, London. In 1867 he became professor of pathological anatomy in University College, and in 1878 he was also appointed professor of clinical medicine. In 1887–95 he was professor of the principles and practice of medicine. Apart from numerous contributions to medical and other periodicals, and to Quain's 'Dictionary of Medicine,' his works include 'The Modes of Origin of Lowest Organisms' (1871); 'The Beginnings of Life' (1872); 'Evolution and the Origin of Life' (1874); 'Lectures on Paralysis from Brain Disease' (1875); 'The Brain as an

Organ of Mind' (1880), which has been translated into French and German; 'Paralysis: Cerebral, Bulbar and Spinal' (1886); 'A Treatise on Aphasia and other Speech Defects' (1898); 'Studies in Heterogenesis' (1904); 'Nature and Origin of Living Matter' (1905); 'The Evolution of Life' (1907); 'The Origin of Life' (1911). He is a recognized authority in the pathology of the nervous system and an advocate of the doctrine of spontaneous generation.

**BASTIAT,** ba'-styą', **Frédéric,** a distinguished French political economist: b. Bayonne, 19 June 1801; d. Rome, 24 Dec. 1850. He entered in 1818 the counting-house of his uncle at Bayonne, but he felt no enjoyment in the routine of mercantile life, and in 1825 retired to a property at Mugron, of which he became possessor on the death of his grandfather. Thus withdrawn from society he devoted himself with eagerness to meditation and study, mastering the English and Italian languages and literatures, speculating on the problems of philosophy and religion, and digesting the doctrines of Adam Smith and Say, of Charles Compte and Dunoyer. His first publication appeared in 1844 under the title 'De l'influence des tarifs français et anglais sur l'avenir des deux peoples.' In 1845 he came to Paris in order to superintend the publication of his 'Cobden et la ligue, ou l'agitation anglaise pour la liberté des échanges,' and was very cordially received by the economists of the capital; from Paris he went to London and Manchester, and made the personal acquaintance of Cobden, Bright and other leaders of the league. When he returned to France he found that his writings had been exerting a powerful influence; and in 1846 he assisted in organizing at Bordeaux the first French Free Trade Association. He wrote in rapid succession a series of brilliant and effective pamphlets and essays, showing how socialism was connected with protection, and exposing the delusions on which it rested. While thus occupied he was meditating the composition of a great constructive work, meant to renovate economical science by basing it on the principle that "interests left to themselves tend to harmonious combinations, and to the progressive preponderance of the general good." The first volume of this work, 'Les Harmonies économiques,' was published in the beginning of 1850. He was a member successively of the Constituent and Legislative assemblies. He also published 'Propriété et Loi'; 'Justice et Fraternité'; 'Protectionisme et Communisme'; and many other treatises. The life work of Bastiat, in order to be fairly appreciated, requires to be considered in three aspects. (1) He was the advocate of free trade, the opponent of protection. The general theory of free trade had, of course, been clearly stated and solidly established before he was born, and his desire to see its principles acted on in France was quickened and confirmed by the agitation of the Anti-Corn-Law League for their realization in England, but as no one denies it to have been a great merit in Cobden to have seen so distinctly and comprehensively the bearing of economical truths which he did not discover, no one should deny it to have been also a great merit in Bastiat. He did far more than merely restate the already familiar truths of free trade. He showed as no one before him had done how they were applicable in the various spheres of French agriculture, trade and commerce. Now the abstract theory of free trade is of comparatively little value; its elaboration so as to cover details, its concrete application and its varied illustration are equally essential. And in these respects it owes more, perhaps, to Bastiat than to any other economist. In the 'Sophismes Economiques' we have the completest and most effective, the wisest and the wittiest exposure of protectionism in its principles, reasonings and consequences which exists in any language. (2) He was the opponent of socialism. In this respect also he had no equal among the economists of France. He alone fought socialism hand to hand, body to body, as it were, not caricaturing it, not denouncing it, not criticizing under its name some merely abstract theory, but taking it as actually presented by its most popular representatives, considering patiently their proposals and arguments, and proving conclusively that they proceed on false principles, reasoned badly and sought to realize generous aims by foolish and harmful means. Nowhere will reason find a richer armory of weapons available against socialism than in the pamphlets published by Bastiat between 1848 and 1850. These pamphlets will live, it is to be hoped, at least as long as the errors which they expose. (3) He attempted to expound in an original and independent manner political economy as a science. In combating first the protectionists and afterward the socialists, there gradually rose on his mind a conception which seemed to him to shed a flood of light over the whole of economical doctrine, and, indeed, over the whole theory of society, namely, the harmony of the essential tendencies of human nature. The radical error, he became always more convinced both of protectionism and socialism, was the assumption that human interests, if left to themselves, would inevitably prove antagonistic and anti-social, capital robbing labor, manufactures ruining agriculture, the foreigner injuring the native, the consumer the producer, etc.; and the chief weakness of the various schools of political economy, he believed he had discovered in their imperfect apprehension of the truth that human interests, when left to themselves, when not arbitrarily and forcibly interfered with, tend to harmonious combination, to the general good. Such was the point of view from which Bastiat sought to expound the whole of economical science. The sphere of that science he limited to exchange, and he drew a sharp distinction between utility and value. Political economy he defined as the theory of value, and value as "the relation of two services exchanged." The latter definition he deemed of supreme importance. It appeared to him to correct what was defective or erroneous in the conflicting definitions of value given by Adam Smith, Say, Ricardo, Senior, Storch, etc., to preserve and combine what was true in them, and to afford a basis for a more consistent and developed economical theory than had previously been presented. It has, however, found little acceptance, and Roscher, Cairnes and others seem to have shown it to be ambiguous and misleading. A consequence of it on which he laid great stress was that the gratuitous gifts of nature,

whatever be their utility, are incapable of acquiring value — what is gratuitous for man in an isolated state remaining gratuitous in a social condition. Thus, land, according to Bastiat, is as gratuitous to men at the present day as to their first parents, the rent which is paid for it,— its so-called value,— being merely the return for the labor and capital which have been expended on its improvement. In the general opinion of economists he has failed to establish this doctrine, failed to show that the properties and force of nature cannot be so appropriated as to acquire value. His theory of rent is nearly the same as Carey's, that is, decidedly anti-Ricardian. His views on the growth of capital and interest, on landed property, competition, consumption, wages and population, are independent, and, if not unqualifiedly true, at least richly suggestive. His works were published in seven volumes (Paris 1881). Consult Bondurand, 'Frédéric Bastiat' (ib. 1879); and Von Leesen, 'Frédéric Bastiat' (Munich 1904). See ECONOMICS.

**BASTIDE, Jules,** French statesman: b. Paris, 21 Nov. 1800; d. 1879. Early a Democrat, he never ceased to labor for the downfall of the Bourbon monarchy, and fought hard in the revolution of July 1830. He was also opposed to the Orleans monarchy. Condemned to death for his share in the insurrection of 5 June 1832, he escaped from prison and fled to England, where he resided two years. He returned in 1834, and was acquitted. After the death of Armand Carrel he became chief editor of the *National* newspaper in 1836. This place he resigned in 1846 and founded the *Revue Nationale* in 1847. He rendered great assistance to Lamartine in the office of the Ministry of Foreign Affairs, and was Minister for Foreign Affairs from 10 May to 20 Dec. 1848. He retired to private life after the *coup d'état* of 1851. He was the author of 'La république française et l'Italie en 1848' (1858); 'Guerres de religion en France' (1859).

**BASTIEN-LEPAGE,** bäst-yen'-le-päzh, **Jules,** French painter: b. Damvilliers, 1 Nov. 1848; d. 10 Dec. 1884. He studied under Cabanel, and early began to attract notice by his impressionist pictures in the Salon. Some of his more important works were 'In Spring,' 'The First Communion,' 'The Shepherds,' 'The Potato Harvest,' 'The Wheat-field,' 'The Beggar, and 'Joan of Arc Listening to the Voices.' His most striking portraits were those of his grandfather, his father and mother, Sarah Bernhardt, André Theuriet and the Prince of Wales (Edward VII). He was made a chevalier of the Legion of Honor in 1879. Consult Theuriet, 'J. Bastien-Lepage, l'homme et l'artist' (1885).

**BASTILLE,** bàs-tēl' (from med. Fr. *bastir,* to build), the French designation for an armory or fortified building constructed for military purposes. The word is popularly associated with the Bastille, or the state prison and citadel of Paris, built to protect the palace of Charles V against the incursions of the Burgundians, and destroyed by the mob in the beginning of the Revolution in 1789, after an existence of over four centuries. It was founded by Hugues d'Aubriot in 1369, and completed by the addition of four towers in 1383.

The building became notorious for imprisonment by *lettres de cachet,* or secret warrants issued in the name of the king, but the names of the individuals were inserted by the ministers, who were the depositaries of these letters. Of the origin of this custom we may perhaps find the explanation in Montesquieu's 'Esprit des Lois,' where it is said, "Honor is the virtue of monarchies, and often supplies its place." A nobleman was unwilling to be dishonored by a member of his family. Filial disobedience and unworthy conduct were probably not more uncommon among the nobility of France than elsewhere. But in such cases fathers and relations often requested the confinement of the offender until the head of the family should express a wish for his release. At first this privilege was limited to the chief families of the country. The next step was, that the ministers of government considered themselves entitled to the same privileges as heads of families among the nobility. If an offense was committed in their offices or households, which, if known, would have cast a shadow upon the ministers themselves, they arrested, *motu proprio,* the obnoxious individuals, and often made use of their privilege to put out of sight persons whose honest discharge of duty had excited their displeasure, or who were acquainted with facts disgraceful to the ministers themselves. It sometimes happened that no further examination of the prisoners was held, and the cause of their detention nowhere recorded. In such cases an individual remained in prison sometimes 30 or 40 years or even till his death, because succeeding officers took it for granted that he had been properly confined, or that his imprisonment was required for reasons of state. The invention of the *lettres de cachet* immediately opened the door to the tyranny of ministers and the intrigues of favorites, who supplied themselves with these orders, in order to confine individuals who had become obnoxious to them. These arrests became continually more arbitrary, and men of the greatest merit were liable to be thrown into prison whenever they happened to displease a minister, a favorite or a mistress. On 14 July 1789 the Bastille was surrounded by a tumultuous mob, who first attempted to negotiate with the governor, Delaunay, but when these negotiations failed, began to attack the fortress. For several hours the mob continued their siege without being able to effect anything more than an entrance into the outer court of the Bastille; but at last the arrival of some of the Royal Guard with a few pieces of artillery forced the governor to let down the second drawbridge and admit the populace. The governor was seized, but on the way to the hôtel de ville was torn from his captors and put to death. The next day the destruction of the Bastille began, and a bronze column now marks its site. The event considered by itself was of no great national importance, but it marked the beginning of the French Revolution.

Much exaggeration took place in relation to the discoveries said to be made in its demolition, especially in relation to one Count de Lorges; but it is sufficiently established that there was no such person in existence, certainly not in the Bastille. No exaggeration, however, was needed. Seven persons only were found in its cells and dungeons; one, the Count de

Solage, a prisoner since his 11th year; another, Tavernier, the son of Paris Duverney, who, after 10 years at the Isles Marguerites, had passed 30 years in the Bastille, and who reappeared on his liberation, bewildered, with a broken intellect, like a man awakened from a sleep of 40 years, to a world new compared with that on which he had closed his eyes. Records of horrors even worse than this were found inscribed on the registers of the prison. Two will suffice. They are the names of Father Theodore Fleurand, of Brandenburg, a Capuchin, retained many years on suspicion of being a spy; and of one Lebar, arrested at 76 and dead at 90 years. Nearly 50 years before Cagliostro scrawled on the walls of his cell: "The Bastille shall be demolished, and the people shall dance on the area where it stood." This prophecy, at least, of the empiric and impostor, was realized to the letter. It was the Carmagnole which they danced about the liberty trees to the tune of the 'Ça Ira.'

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**BASTINADO,** a punishment employed by the Turks, which consists of blows upon the back or soles of the feet, applied with a light wooden stick or with a knotted string.

**BASTION,** a flanking tower in mediæval fortification, from which archers and war machines could direct their projectiles on the storming enemy while he was held in check by the ditch. On the introduction of artillery into Europe towers were made considerably larger than formerly, and ultimately, in the beginning of the 16th century, the Italian engineers made them polygonal instead of round or square, thus forming a bastion. This is an irregular pentagon, one side of which is turned inward toward the tower, so that the opposite salient angle faces the open field. The two longer sides, enclosing the salient angle, are called the faces; the two shorter ones, connecting them with the town wall or rampart, are called the flanks. The faces are destined to reply to the distant fire of the enemy, the flanks to protect the ditch by their fire. The first Italian bastions still showed their descent from the ancient towers. They kept close to the main walls; the salient angle was very obtuse, the faces short, and the parapet revetted with masonry to the very top. Bastions are built in very different ways. Some are entirely filled with earth; some have a void space inside; some are straight, some curved, some double, some have even three or four flanks, one over the other; some have *faussebrayes,* or low ramparts of earth outside; sometimes they have casemates, destined for the retreat of the garrison, or for batteries; sometimes cavaliers or orillons, etc. In modern times, among the fortifications built according to the system of bastions, those on the plan of Cormontaigne and the modern French works are considered best adapted for defense. They are spacious; the flank of the side bulwark, which is perpendicular to the prolongation of the face of the principal bulwark, is not farther distant than 300 paces from its point; it is also straight, and orillons and other artificial contrivances are banished. See FORTIFICATION.

**BASTWICK, John,** English physician: b. Writtle in Essex 1593; d. 1654. He settled at Colchester, but instead of confining himself to his profession entered keenly into theological controversy, and in 1624 procured the publication in Holland of a treatise which he had written, entitled 'Elenchus Religionis Papisticæ,' which, as he declares on the titlepage, he proves to be neither apostolic nor catholic, nay, not even Roman. He afterward published 'Flagellum Pontificis et Episcoporum Latialium,' which acquired some notoriety as a fervid attack on Episcopacy in general, and attracted the attention of the High-Commission Court, who called the author before them, and condemned him to a fine and two years' imprisonment. Bastwick became more zealous than before, however, and published a defense addressed to the English prelates and a new "litany," in which his former offenses were boldly repeated. A second sentence mercilessly condemned him to a much heavier fine, to exposure to the pillory, the loss of his ears and imprisonment for life. The ascendency of the Parliament in 1640 procured his freedom; the sentence was formally repealed, and the amount of the fines imposed on him was afterward refunded. He appears to have been a stanch Presbyterian, for in 1648 we find him attacking the Independents.

**BASUTOLAND,** South Africa, an English Crown colony, lying to the east of the Orange River Colony, and on the northeast of Cape Colony. The Basutos belong chiefly to the great stem of the Bechuanas, out of one of the chief branches of whom, along with the survivors of various other Kaffir tribes, they have arisen. Their countenance is better formed than that of the negroes, although they have the flat nose, protruding lips, and woolly hair of the latter. Their figure is slender and well proportioned, the color of their skin a very dark brown, and their disposition cheerful, mild and pacific. Their land, called by themselves Lesuto, is very fertile, and is cultivated with great industry; but its fertility has long exposed them to the encroachments of their neighbors. Under their chief Moshesh, who died in 1869, they were raised from a state of utter barbarism to a certain degree of civilization, and the land was thrown open to missionaries. Being exposed, however, to constant attacks of their warlike neighbors, Moshesh was at last induced to request the English government to adopt them as subjects. This was acceded to, and in 1868 Basutoland was declared English territory, being annexed to Cape Colony in 1871. In 1884, however, Basutoland was placed under the direct authority of the home government. Since 1903 Basutoland is a member of the South African Customs Union. The imports consist chiefly of clothing and blankets, agricultural implements, metal products and groceries. The yearly imports average about $1,250,000 and the exports about $1,000,000. Basutoland is administered by a resident commissioner, under the high commissioner of South Africa. It is divided into seven

districts, subdivided into wards administered by hereditary chiefs. The administration of justice is also, to a very large extent, in the hands of native judges. A railway from Maseru connects with the South African railway system. It has an area of about 10,300 square miles. Pop. (1911) 404,507. Consult Widdicombe, 'Fourteen Years in Basutoland' (1892); Barkley, 'Among Boers and Basutos' (1900); Bryce, 'Impressions of South Africa' (1899); Ellenberger, 'History of the Basuto' (1912).

**BASVILLE.** See MONTI, VINCENZO.

**BAT**, one of a group (order *Cheiroptera*) of small mammals adapted to life in the air by the possession of wings formed of a membrane stretched between the greatly prolonged bones of the arm and hand. The general organization of bats allies them to the *Insectivora*. The bones of the spine, hinder limbs and tail are of a normal character; the chest is much enlarged to admit of the increased size of the lungs and heart, necessary to the relatively violent exertion necessary to flight, the breast bone is keeled as in birds, and the muscles of the fore limbs are much enlarged. The fore limbs themselves consist of the normal number and arrangement of bones, but all are greatly elongated, especially those of the fingers, which are so lengthened out as often to be equal to the total length of the spine. The thumb, however, is comparatively small, stands at right angles to the other bones, and terminates in a strong claw of great service in clinging to supports. The whole extent of the arm and hand in the bats is enclosed within a membrane which consists of leathery skin more or less furry upon the outside, which stretches between the fingers, arm bones and body, forming an extensible membrane or parachute, and constituting an effective instrument of flight. In some bats a similar membrane (which is only an extension of the skin and is of double thickness) stretches from the heel of each hind foot, where it is supported by a bony spur, to the tip of the tail, but in many bats the tail is free from any such membrane. The tail is very variable in length, but is never prehensile nor bushy. The hinder limbs of bats are peculiar in being twisted in such a way that the knee bends backward, making walking very difficult.

The membranous wings of the bat are not only an organ of flight, enabling it to perform feats in the air probably not exceeded by any bird or insect, but are also a means of informing the creature as to its surroundings. Bats are mainly nocturnal and their eyes, though highly organized, are very small, embedded in fur and comparatively useless in the dark, yet no animal seems more thoroughly wide awake and able to take care of itself, even in almost complete darkness, than this one, which habitually lives in gloomy caves and seeks its food only after daylight has departed. The ability which it displays in catching its prey by extraordinary agility in pursuit, and in avoiding obstacles as it darts about among the trees, seem to be due largely to an extreme sensitiveness in the wings. These are not only supplied with a great number of blood vessels and nerves, but their surfaces abound in minute sense-organs, each the terminus of a nerve fibrilla. This armature has evidently arisen as an added means of information, giving the animal a sense of touch more exquisite than we know of elsewhere in the animal kingdom. The well-known experiments of the Italian Spallanzani toward the end of the 18th century, which have been verified by more recent investigations, make it plain that bats depend very largely upon these sense organs in their wings to guide them in their devious flight through the darkness. It was found that bats whose eyes were sealed up with varnish, or even completely destroyed, made their way with apparent ease not only through dark rooms but in places where strings had been stretched across the path in various directions, and other obstacles had to be avoided. These blinded bats never collided with such obstructions, but seemed able to approach a wall at ease, alight upon a perch, or even find a small cavity without apparently searching for it.

For a similar purpose of information many bats are furnished with extraordinary membranous appendages upon the nostrils and ears, which give to some of them the most grotesque appearance. In the large fruit-eating fox-headed bats of the East Indies, which are more nearly diurnal than any others, the ears are of no great size, and the nose is defended only by long hairs about the nostrils and eyelids, but in all the smaller, insect-eating, nocturnal bats, there arise upon the nostrils leaf-like appendages, sometimes very large and complicated which resemble the leathery substance of the wings and in such species, the ears are often several times larger in area than all the rest of the face. These great ears must not only collect sounds far too faint for us to hear, but their membranes are as nervous and sensitive as those of the wings, probably being able to feel degrees of density in the air entirely imperceptible to most other creatures.

Bats are divisible into two groups or suborders, the *Megacheiroptera*, and the *Microcheiroptera*. The first group contains the fruit-eating bats whose large size, reddish fur and fox-like head have given them the name of flying foxes (q.v.). Their chief distinguishing feature, however, is the fact that the molar teeth are not tubercular but are marked with a longitudinal furrow. They live mainly upon fruit and are confined to the tropics of the Old World, and are all included in a single family, *Pteropodidæ*. The *Microcheiroptero* have molars with sharp cusps adapted to cutting and crushing the insects upon which they mainly subsist. This group includes all of the ordinary bats, of which those most familiar in North America and Europe belong to the large and typical family *Vespertilionidæ*, of which nearly 200 species are named. Among the most numerous and widespread of the North American bats are the large hoary bat (*Lasiurus cinereus*) of the Northeastern States; but it keeps to the woods and is not often seen; it migrates to the southern States in winter. It is about 5.50 inches long. Another common bat of the woods is the smaller, silver-haired (*Lasionycterus noctivagans*). The red bat (length 4.40 inches) is numerous in the Alleghanian region, inhabiting caves in great companies; but the "common" bat of the whole country east of the Rockies is the little, glossy, brown familiar of our homes and gardens, as well as of the woods, which remains with us

the year round, hibernating during cold weather in the hollow trees, caves and crevices about buildings, where they make their home, and whence they emerge at night, to seek their prey about our farmyards and gardens. As the insects caught are mainly mosquitoes and similar pests, and as they do no harm, they should be encouraged, rather than feared and persecuted. "Awake at the most," says Cram, "some four out of every 24 hours of their drowsy little lives, they never make any nests or even attempt to fix over the crannies where they hide, and where the little bats are born. These helpless little things are not left at home at the mercy of foraging rats and mice. When the old bat flits off into the twilight, the youngsters often go with her, clinging about her neck. . . . At times, she deposits them on the branch of a tree, where they hang, sheltered by the leaves."

The lower Mississippi Valley has a yellowish bat, called "big-eared" (*Corynorhinus macrotis*) which differs from the others in that its great ears are joined together by their bases in front.

For a systematic account of the bats of the world consult Dobson, 'Catalogue of Chiroptera in the British Museum' (1878), and his subsequent papers, mentioned in Flower's 'Mammalia' (1891). For North American forms consult Allen, H., 'Bats of North America' (Smithsonian Institution, Washington 1893). For habits, etc., consult the writings of Harlan, Audubon, Baird, Godman, Mearns, E. A., Herrick, C. L., Miller, G. S., and especially Merriam, C. H., 'Mammals of the Adirondacks' (Linnæan Society New York 1893); Stone and Cram, 'American Animals' (1902); Goose, 'A Naturalist's Sojourn in Jamaica' (1851). See also FOX-BAT; FRUIT-BAT; LEAF-NOSED BATS; VAMPIRE, and similar titles.

**BAT-PARASITES.** Besides bugs (see BED-BUG) certain very strangely modified wingless flies are in rare cases found living on bats in Africa and the East Indies. They are somewhat spider-like, with a narrow eyeless head, though four ocelli are present in some species, which rests on the back of the thorax, while the legs are large, long, and sprawling, ending in large claws. They are only a line or two in length. The larva is, like that of the sheep-tick (q.v.) and horse-fly (*Hippobosca*), very peculiar, the maggot being probably nourished in the dilated oviduct of the fly, then attaining its full growth, when it is expelled in the shape of a broad, short puparium, the skin being hardened by the excretion of chitin.

**BATABANO,** bą-tā-bą-nō', Cuba, town in the province of Havana near the south coast, 37 miles from Havana, by rail. This port is one at which coasting steamers touch, and is the nearest point in Cuba to the Isle of Pines. The natives are engaged in sponge fishing. San Cristobal de la Habana was founded on the site of the modern Batabano by Diego Velasquez in 1514. Pop. about 6,500.

**BATAC,** bą-tāk', or **BATAG,** Philippines, an island about one and a half miles off the northeast coast of Samar, the most northerly of that portion of the Philippine Islands which goes under the designation of Visaya, or Bisaya. Area, 18 square miles.

**BATAC,** or **BATAG,** Philippines, a town of Luzon, the largest in the province of Ilocos Norte, founded in 1587. It is situated 10 miles south of Laoag and is a flourishing trade centre. Pop. about 19,500.

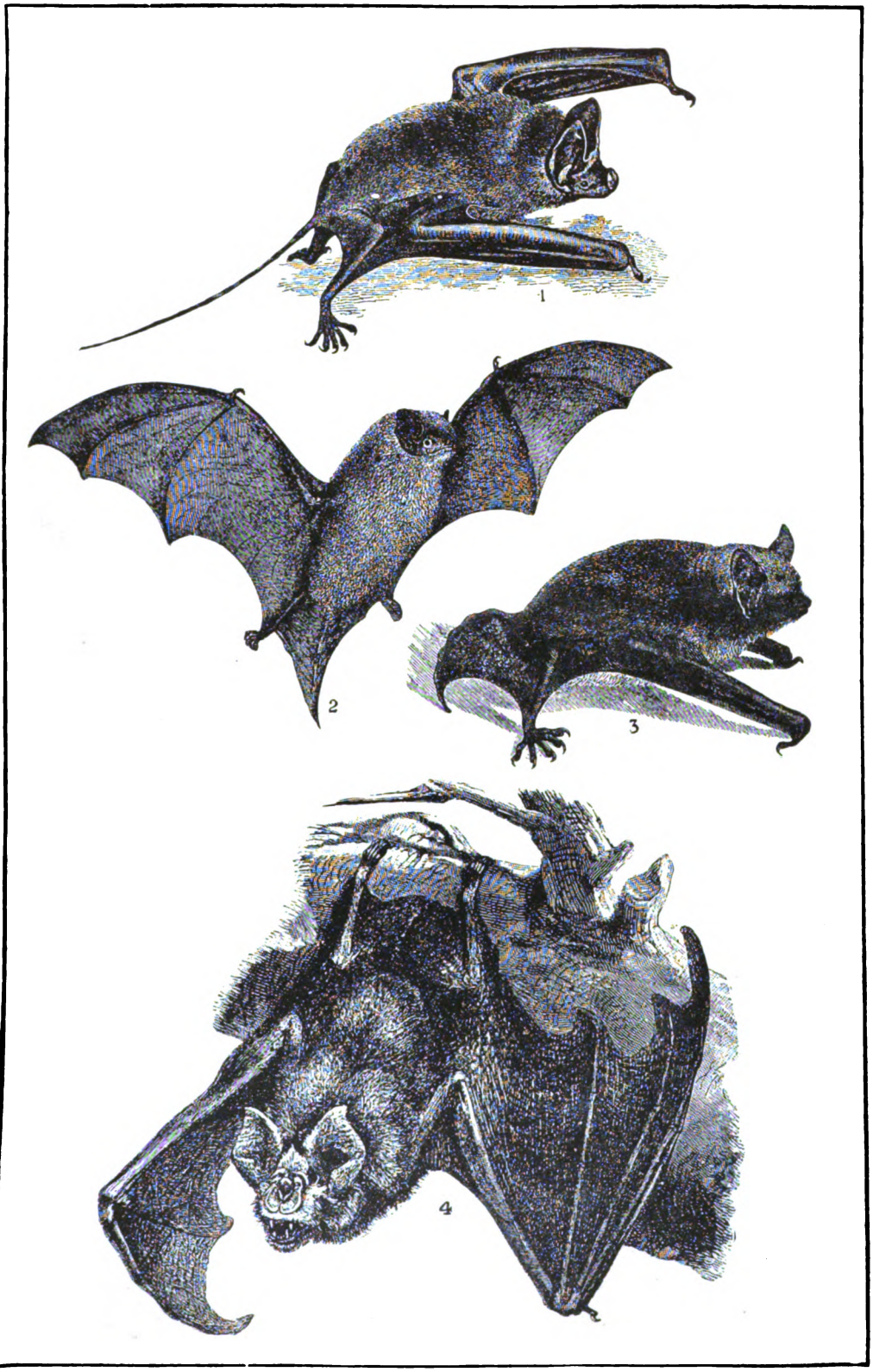
**BATAK,** bā'tąk, Bulgaria, a district and town southwest of Philippopolis. The region became prominent in European history in the time of the Bulgarian insurrection against Turkey in 1876. In May of that year the villagers of Batak were preparing to take part in the insurrection, when the place was attacked by a force of Bashi-Bazouks under the command of Achmet Agha of Dopat. After a short struggle the village was surrendered and the inhabitants gave up their weapons, on the assurance of the Turkish commander that "not a hair of their heads should be touched." On 9 May 1876 the Turks began one of the most cruel massacres recorded in history; the inhabitants of the unfortunate village were butchered and those who took refuge in the church were burned to death by the Turkish soldiers. Mr. Baring, the English commissioner, visiting the place two months later, found but one survivor, an old woman. The Turkish government rewarded Achmet with a decoration of honor. The news of the massacre at Batak and of other "Bulgarian atrocities" aroused all Europe and furnished Russia with an excellent pretext for declaring war against Turkey in 1877. It suffered heavily in the war against the Turks in 1912–13 and in the second Balkan War in 1913. See also BULGARIA; SAN STEFANO, TREATY OF; TURKEY.

**BATALEUR,** bą-tą-lėr', a large, voluminously crested eagle of Africa, named *Helotarsus ecaudatus* with reference to the unusual shortness of its tail. It has the handsomest plumage of all the eagles, presenting bold contrasts of rich maroon, black and gray, with bronzy reflections from the wings. It feeds mainly on lizards and snakes, attacking the latter, even when venomous, by blows of its powerful beak. Its breeding season, which is at the commencement of the hot weather when other birds are busy at other things, seems to be placed with reference to the greater ease with which snakes can then be captured, when the grass dies down or burns off, exposing them to view.

**BATALHA,** bā-tāl'yą, Portugal, village 69 miles north of Lisbon, famed for its Dominican convent, founded by King John I, in commemoration of a victory over the king of Castile in the year 1385. This convent, one of the most splendid buildings in Europe, is 576 feet long and 443 wide. Its church, in which lie the remains of the founder and the following three kings of the house of Aviz, as well as those of Prince Henry the Navigator, is a beautiful edifice, adorned with many art treasures. Pop. 3,830.

**BATAN,** bā'tan, Philippines, a province of the island of Luzon, forming the peninsula between the bay of Manila and the China Sea: area, 450 square miles; chief town, Bolanga. It is noted for many excellent varieties of marble, which are extensively used in the churches and public buildings of Manila and other towns of the Philippines. The inhabitants of the towns and coasts of this province are of the Tagalog race, but, besides these, the mountain fastnesses are inhabited by numerous tribes of Negritos.

# BATS




1 Flap-nose Bat (Rhinopoma microphyllum)
2 Pigmy Bat (Vesperugo pipistrellus) (natural size)
3 Water Bat (Vespertilio daubentonii)
4 Horse-shoe Nose Bat (Rhinolophus ferrum-equinum)

**BATAN,** Philippines, a town on the island of Panay, in the province of Capiz, 21 miles west of Capiz. Pop. (1898) 12,908.

**BATAN,** or **BASHI ISLANDS,** Philippines, a group of small islands in the Chinese Sea, discovered by Dampier in 1687, now a dependency of the Philippines, north of which they are situated, midway between Luzon and Formosa. American control was established over these islands in March 1900, with Teofilo Costillejo as first governor. The Batans are bounded on the north by Bashi Channel, which divides the Philippines from the Japanese insular territory, and have an area of 125 square miles and a population estimated at 9,500. The principal islands in the group are Itbayal, Basay, Saptan and Hujos. Santo Domingo de Basco, the principal town and port, is about 500 miles from Manila, and has a population of about 3,000. The other towns are San Bartolome de Calayan, San Carlos de Marigatao, San José de Ibana, Santa Maria de Mayan and San Vicente de Saptan. Under Spanish rule Santo Domingo was the residence of a political military governor, a judge and an attorney-general.

**BATANÆA,** or **BASHAN,** a district of ancient Palestine, corresponding to that now called Hauran. It reached from Mount Hermon on the north to the brook of Jabbok (the modern Nahr el Zerka) on the south, and from the Jordan on the west to the Geshurite and Maachathite boundaries on the east. Its chief towns were Ashtaroth, Edrei, Golan and Salchah. It was a rich pasture land, famed for its sheep and oxen. In Roman times with Ituræa, Gaulanitis Trachonitis and Auranitis, Batanæa formed one of the five divisions of the country. For its part in the history of Israel consult Num. xxi, 33–35; Deut. iii, 1–3; Josh. xiii, 29–31; Amos iv, 1; Ezek. xxxvii, 6; Isa. ii, 13.

**BATANGAS,** bạ-tän'gạs, Philippines, a town on the island of Luzon, the capital of the province of the same name, 58 miles south of Manila. It was founded in 1581, and is situated on the large bay of Batangas, opening into the Strait of Mindoro. It is well built, containing several spacious streets, in which are many elegant mansions. A number of annual expositions are held in the city. The city has an excellent harbor, and prior to the war between the United States and Spain was the seat of a large commerce. The province is one of the richest sugar growing districts in the Philippines; but the industry is far inferior to its possibilities owing to the lack of proper machinery and modern methods of treatment. There are forests of pine wood on the mountains, and the region is rich in mineral waters. The only important industry is the manufacture of dyestuffs, and silk, abaca and cotton fabrics. It is also notable for its large production of cocoanut oil, the larger part of which is used for domestic purposes, chiefly lamp oil and lubricating machinery. Such of it as is exported to Europe, after being solidified, is manufactured into soap and candles. Pop. 39,358.

**BATATAS,** bạ-tā'tạs. See SWEET POTATO.

**BATAVI,** an old German nation which inhabited a part of the present Holland, especially the island called Batavia, formed by that branch of the Rhine which empties itself into the sea near Leyden, together with the Waal and the Meuse. Their territories, however, extended much beyond the Waal. Their bravery was commended by Tacitus. According to him, they were originally the same as the Catti, a German tribe which had emigrated from their country on account of domestic troubles. This must have happened before the time of Cæsar. When Germanicus was about to invade Germany from the sea, he made their island the rendezvous of his fleet. Being subjected by the Romans, they served them with such courage and fidelity as to obtain the title of their friends and brethren. They were exempted from tributes and taxes, and permitted to choose their leaders among themselves. Their cavalry was particularly excellent. During the reign of Vespasian they revolted, under the command of Civilis, from the Romans, and extorted from them favorable terms of peace. Trajan and Adrian subjected them again. At the end of the 3d century the Salian Franks obtained possession of the island of Batavia. See BATAVIAN REPUBLIC.

**BATAVIA,** properly the name of the island occupied by the ancient Batavi, became at a later date the Latin name for Holland and the whole kingdom of the Netherlands. The name Batavian Republic (q.v.) was given to the Netherlands on their new organization, 16 May 1795, and they continued to bear it till the establishment of the kingdom of Holland, under Louis Bonaparte, 8 June 1806.

**BATAVIA,** Java, city and seaport on the north coast of the island, near the west end, and the capital of all the Dutch East Indies; long. 106° 50′ E.; lat. 6° 8′ S. It is situated on a wide, deep bay, in which are interspersed many low, green islets, within which ships find safe anchorage, the roadstead being sheltered from the northwest monsoon. The largest of these islets is Onrust, at which all ships above 300 tons burden have to anchor. The town consists of two portions. The old is situated in a low, marshy plain near the sea, and intersected by the Great River and sundry canals, is exceedingly unhealthy, and subject to an intermittent fever, very fatal to strangers. Much has been done, however, to diminish the unhealthiness by draining the marshes, and letting currents of water into the stagnant canals. The old is still the business quarter and contains the principal warehouses and offices of the Europeans, the Java Bank and the exchange. On the west side of the Great River is the Chinese quarter, inhabited entirely by Chinese. Batavia is the chief mart among the islands of the Asiatic Archipelago for the products of the Eastern seas and the manufactures of the West, and its commerce is correspondingly important. The chief products are coffee, sugar, tea, rice, different spices, timber, dyewoods, diamonds, drugs, minerals, etc. Batavia was founded by the Dutch in 1619 and attained its greatest prosperity in the beginning of the 18th century, when it had about 150,000 inhabitants. The most important edifices are the Stadt-house, Calvinistic, Lutheran and Portuguese churches, some Mohammedan mosques and Chinese temples. Among its educational institutions are a gymnasium, a number of government

and private schools, an orphan asylum, a medical school for natives connected with the military hospital, and a number of scientific societies. Pop. about 140,000, of whom 9,500 are Europeans, 28,000 Chinese and 3,000 Arabs. The inhabitants are chiefly of Malay extraction, with a considerable admixture of Chinese, and a small number of Europeans (Dutch, English and Portuguese). A United States consul resides here. See JAVA.

**BATAVIA**, Ill., town in Kane County, on the Fox River, and on the Chicago & N. W. and Chicago, B. & Q. railroads, 37 miles west of Chicago. Here is the State Asylum for the Insane. Batavia has fine churches and public schools and a public library. Among the industries are stone quarries and foundries, and manufactories of farm implements, wagons, pumps, engines and windmill factories. Batavia was settled in 1834 and incorporated in 1850. It is governed, under a charter of 1902, by a mayor, elected every two years, and a unicameral council. Pop. 5,000.

**BATAVIA**, N. Y., town and county-seat of Genesee County, 37 miles east of Buffalo and 33 miles west of Rochester, on Tonawanda Creek, and on the New York Central, the Lehigh Valley and Lake Erie and Western railroads. It is in an agricultural region; has manufactories of plows, threshers and agricultural implements, rubber goods, shoes, cut-glass, sheet metal goods, paper-boxes, monuments, electrical equipment, shot-guns, stampings and metal specialties, and there are also flour mills and canning factories. In 1914 there were in operation 57 establishments, employing 2,833 persons, who received $1,733,000 for their services. The capital invested in these enterprises totalled $7,847,000; the raw materials used were valued at $2,423,000 and the finished products at $5,340,000. It has three banks and taxable property valued at $11,252,827. Batavia is the home of individual instruction in public schools, of which there are seven besides one high school. Among the public buildings are the courthouse, county jail, surrogate's office, county clerk's office, Holland Purchase museum and land office, containing interesting historical relics, the State Institution for the Blind and the Dean Richmond Memorial Library. There are daily and weekly newspapers. Batavia has the charter form of government; the waterworks and electric-light plant are owned by the municipality. A new filtration plant for sewage disposal is about to be constructed. The village was founded in 1811, and first incorporated in 1826. It was the home of William Morgan, made famous through the Anti-Masonic excitement in 1826. Pop. (1910) 11,613; (1916) 15,300. Consult Seaver, 'Historical Sketch of the Village of Batavia' (Batavia 1849).

**BATAVIAN REPUBLIC**, the name adopted by the Seven United Provinces of the Netherlands soon after the French Revolution, and acknowledged by the powers of Europe. The whole republic was declared one and indivisible; all members of society were declared equal in the eye of the law, without respect to rank or birth; all religious societies, acknowledging a Supreme Being, equally protected by law. Feudality was abolished, all fiefs declared allodial and possessors of lordships to be indemnified. In 1806 the form of government was changed into that of a kingdom, under the name of Holland; and the Batavian republic fell nominally under the sway of Louis Bonaparte as its sovereign, but really under that of his brother Napoleon. See NETHERLANDS.

**BATCHELLER, George Sherman**, American jurist: b. Batchellerville, N. Y., 25 July 1837; d. Paris, France, 2 July 1908. He was admitted to the bar in 1858; entered the Union army in 1862; was taken prisoner at Harper's Ferry, and exchanged in 1863; was then appointed deputy provost-marshal-general of the department of the South; and in 1865–70 was inspector-general on the staff of Governor Fenton of New York. He was president of the International Tribunal of Egypt 1883–85; assistant Secretary of the United States Treasury 1889–91; United States Minister-resident and Consul-General to Portugal 1891–93; and in 1898, again a member of the International Tribunal of Egypt. In May 1902 he was promoted to the Supreme Court of Appeals. In 1879 King Humbert decorated him with the great cordon of the Order of the Crown of Italy, in recognition of his services as president of the Universal Postal Congress of 1897.

**BATCHELOR, George**, American Unitarian clergyman: b. Southbury, Conn., 1836. He was secretary of the American Unitarian Association 1893–97, and has since been editor of the *Christian Register*, published in Boston. He has also been secretary of the National Unitarian Conference 1870–80, and its chairman 1893–94. He is the author of 'Social Equilibrium.' During the last 50 years he has served three parishes, in Salem, Mass., Chicago, Ill., and Lowell, Mass. He has given lectures on ethics at the schools of theology at Meadville, Pa., and at Harvard University. In his eightieth year he is on the retired list, but during the last year has contributed articles to *The Christian Register*, *The Harvard Theological Review* and *The Harvard Graduates' Magazine*. While a junior in Harvard College he spent a winter as acting superintendent of the United States Sanitary Commission at Sheridan's headquarters at Winchester, Va. In recognition of this service he was made a member of The Union Society of the Civil War and also of The United Military Order of America. In 1911 he was made a doctor of divinity by the Meadville Theological School.

**BATCHIAN**, bät-shyän', or **BATJAN**, one of the Molucca Islands, west of the southern peninsula of the large island of Halmahera or Gilolo. Area, 914 square miles; pop. about 13,000. It belongs to the Dutch residency of Ternate, consists of two peninsulas joined by a narrow isthmus, and has many mountains. Batchian produces gold, copper, coal, sago, cocoanut trees, rice, cloves and fine timber.

**BATE, William Brimage**, American legislator: b. near Castalian Springs, Tenn., 7 Oct. 1826; d. Washington, D. C., 9 March 1905. He served as a volunteer through the Mexican War; graduated at the Lebanon Law School in 1852; elected attorney-general of the Nashville district in 1854; and was presidential elector in 1860. In the Civil War he rose from private to the rank of major-general in the Confederate army, and was three times dangerously wounded. He was an elector-at-large for Ten-

nessee on the Democratic ticket in 1876; was elected governor in 1882 and 1884, and a United States senator in 1887, 1893 and 1899.

**BATEMAN, Newton,** American educator: b. Fairfield, N. J., 27 July 1822; d. Galesburg, Ill., 21 Oct. 1897. He graduated from Illinois College, 1843, and studied at Lane Theological Seminary, but began to teach instead of entering the ministry. He was professor of mathematics at Saint Charles College, 1847–51; State superintendent of public instruction, 1858–63; member of the State board of health, 1877–97, and president of Knox College, 1875–93, when ill-health caused his retirement. His official reports are of high value in educational literature, and much of the excellence of the Illinois school laws is due to his wisdom and foresight. He published 'School Laws of Illinois' (1865, 12th ed., 1866); 'School Laws and Common School Decisions of the State of Illinois'; revised by W. L. Pillsbury (1888).

**BATES, Arlo,** American author: b. East Machias, Me., 16 Dec. 1850. He graduated from Bowdoin in 1876, when he engaged in literary work in Boston, editing the *Sunday Courier,* 1880–93; and afterward became professor of English literature in the Massachusetts Institute of Technology. He is author of poems and novels, including 'The Pagans' (New York 1884); 'A Lad's Love,' 'The Wheel of Fire' (1885); 'The Philistines' (1888); 'Berries of the Brier' (1886), poems; 'Told in the Gate' (1892); 'Talks on Writing English,' 'Talks on the Study of Literature' (1897); 'The Puritans' (1899); 'Under the Beech Tree' (1899); 'Diary of a Saint' (1902); 'The Intoxicated Ghost' (1908); and an introduction to E. P. Whipple's 'Charles Dickens' (1912).

**BATES, Barnabas,** American clergyman; an active promoter of cheap postage in the United States: b. Edmonton, England, 1785; d. Boston, Mass., 11 Oct. 1853. He came to America at an early age, became a Baptist preacher in Rhode Island, and was, for a time, collector of the port of Bristol. In 1825, having become a Unitarian, he established a weekly journal in New York called the *Christian Inquirer.* During Jackson's administration he received an appointment under Samuel Gouverneur, postmaster of New York, and for some time performed the duties of postmaster himself. The information gained in this capacity first interested him in the question of cheap postage. He investigated the subject for years, wrote, published pamphlets and lectured throughout the country, and finally effected a material reduction in the rates of land postage. He was endeavoring to obtain a corresponding reform in ocean postage at the time of his death.

**BATES, Blanche,** American actress: b. Portland, Ore., 1873. She made her first appearance in 1894 in San Francisco, taking a part in Brander Matthews' one-act play, 'This Picture and That.' Her first success was as Mrs. Hillary in 'The Senator,' and she has played the leading comedy rôle in 'The Last Word,' 'The Railroad of Love,' 'Transit of Leo' and 'The International Match.' Her acting of Nora in 'A Doll's House' (the first Ibsen play presented on the Pacific coast) was a distinct artistic triumph. She has also taken leading parts in 'The Charity Ball,' 'Sweet Lavender,' 'The Dancing Girl,' and others. Her phenomenal success in 'The Great Ruby' (1899); as Miladi in 'The Three Musketeers' (1899); in Long and Belasco's 'Darling of the Gods' (1902–03), and 'The Girl of the Golden West' (1905) has given her a place of assured prominence on the American stage. Consult Strang, 'Famous Actresses of the Day' (Boston 1899).

**BATES, Charlotte Fiske** (MADAME A. ROGÉ), American poet and miscellaneous prose-writer: b. New York, 30 Nov. 1838. She was educated in Cambridge, Mass.; assisted Longfellow in compiling 'Poems of Places'; edited the 'Cambridge Book of Poetry and Song' (Boston 1882); 'The Longfellow Birthday Book'; and 'Seven Voices of Sympathy'; has contributed to magazines and published 'Risks and Other Poems,' a volume of original verse (1879). She married in 1891 M. Adolphe Rogé, who died in 1896.

**BATES, Edward,** American lawyer: b. Belmont, Va., 4 Sept. 1793; d. 25 March 1869. Having settled in Missouri, he served in the legislature and Constitutional Convention, and in Congress in 1827–29. He was Attorney-General of the United States in Lincoln's first administration; and had been a candidate for the presidential nomination in 1860.

**BATES, John Coalter,** American military officer: b. Saint Charles County, Mo., 26 Aug. 1842. He entered the regular army as a lieutenant in the 11th United States infantry, 14 May 1861, and served on the staff of General Meade from the battle of Gettysburg to the close of the war. On 4 May 1898 he was appointed a brigadier-general of volunteers for the war with Spain, and on 8 July was promoted to major-general for his services in the Santiago campaign. In February 1899 he was appointed military governor of the province of Santa Clara, Cuba, and in April following, was ordered to duty in the Philippines. In March 1900 he was assigned to the command of the department of southern Luzon, and for his eminent services there and on the Sulu group was promoted major-general, 9 June 1902. In February 1906 he became lieutenant-general succeeding General Chaffee as chief of staff, and in April 1906 he retired.

**BATES, Joshua,** American financier: b. Weymouth, Mass., 1788; d. 24 Sept. 1864. In 1828 he became a member of the house of Baring Brothers & Company, in London, and subsequently its senior partner. In 1854 he was appointed umpire to the joint British and American Commission for the settlement of claims arising from the War of 1812. He was the principal founder of the Boston Public Library, and in 1852, the first year of its existence, he made it a gift of $50,000, and later gave it 30,000 volumes. Its main reading-room is named «Bates Hall» in his honor.

**BATES, Katharine Lee,** American poet and educator: b. Falmouth, Mass., 12 Aug. 1859. A.B. Wellesley College, 1880; A.M. 1891; Litt.D. Middlebury College, 1914. She was called to the English literature department of Wellesley College, 1885, made associate professor in 1888, professor in 1891. Has edited various English classics, includ-

ing the Heywood volume in the Belles Lettres Series (1916) and written other books on professional lines, as 'The English Religious Drama' (1893) and 'History of American Literature' (1898); has traveled in Europe, Egypt, Palestine, and published several books as fruit of these travels: 'Spanish Highways and Byways' (1900); 'From Gretna Green to Land's End' (1907); 'In Sunny Spain, a Story' (1913). Her volumes of poetry are 'The College Beautiful' (1887); 'Sunshine' (1890); 'The Story of Chaucer's Canterbury Pilgrims Retold for Children' (1909); 'America the Beautiful' (1911).

**BATES, Samuel Penniman,** American historian: b. Mendon, Mass., 29 Jan. 1827; d. 1902. He was principal of Meadville Academy, Pa.; superintendent of schools in Crawford County, Pa., 1857–60; deputy state superintendent of schools, 1860–66; and State historian, 1866–73. Among his publications are the 'Lives of the Governors of Pennsylvania' (1873); 'Lectures on Mental and Moral Culture' (1859); 'History of the Battle of Gettysburg' (1878); 'History of the Battle of Chancellorsville' (1882); 'History of Colleges in Pennsylvania.'

**BATE'S CASE,** an English historical incident of much significance as marking the opening of the struggle of Parliament with the Stuart kings. John Bate, a London merchant, having refused to pay certain duties levied without consent of Parliament, was sent to prison by the royal officers. The Commons supported Bate, but the king's authority to levy impositions on exports and imports was sustained by the Court of Exchequer.

**BATES COLLEGE,** Lewiston, Me., was opened in 1863 and chartered in 1864. It grew out of Maine State Seminary, a secondary school opened in 1857. The college was founded by its first president, Rev. Oren Burbank Cheney, D.D. (1863–94), and bears the name of its chief benefactor, Benjamin Edward Bates, a merchant of Boston and one of the founders of the city of Lewiston. Bates was the first Eastern college to afford collegiate education to women and its first woman graduate (1869) became a professor in Vassar College. Bates is undenominational but thoroughly Christian. Its faculty represents nine different religious denominations and the leading universities and colleges of the United States. It places primary stress upon character, does not tolerate hazing and makes abstinence from intoxicating drinks a condition of student membership. Its courses of instruction cover the range of undergraduate studies as pursued in progressive colleges of to-day. The unusual excellence of its courses in English, including argumentation, is indicated by its 30 victories in 38 intercollegiate debates. Alone among New England colleges, Bates has no secret fraternities. It has chemical, physical and biological laboratories, libraries containing more than 40,000 volumes and a spacious athletic field. Its campus of 45 acres is of rare natural beauty and with its 15 buildings (including a chapel, Carnegie science building and library) has a value of $597,000. Its invested funds amount to $930,000. About 43 per cent of its graduates have become teachers. For the last 20 years the number of its graduates at the head of city high schools in New England is believed to have exceeded those of any other college. Bates has 102 scholarships and it so shapes its policy as to help students of small means to meet their own expenses. The college has 34 officers and instructors and 472 students.

**BATESVILLE,** Ark., city and county-seat of Independence County, on the White River and on a branch of the Saint Louis, I. M. & S. Railroad, 115 miles northeast of Little Rock. It is the seat of Arkansas College, founded 1872, a Presbyterian institution; also of a Masonic Home and School and of an Odd Fellows' Home and School for Widows and Orphans. The river is navigable for steamboats to this point and the United States government has provided, at a cost of over $3,000,000, a system of locks and dams to insure navigation for 100 miles above the town. It contains immense quarries of marble and other stone in which it carries on a large export trade and has woolen mills, flouring mills, furniture factories, municipal electric lighting and power plants, waterworks. etc. Pop. (1910) 3,400.

**BATFISH,** a sea-fish (*Malthe vespertilio*) of low organization, constituting the family *Malthcidæ,* allied to the goosefishes (*Lophiidæ*), which creeps about the bottom like a huge toad and feeds upon whatever comes within its reach. It is numerous in all warm seas and some related forms inhabit the deeper parts of the ocean. See GOOSEFISH.

**BATH.** As the most ancient records of the human race refer to the use of the bath it is probably safe to surmise that the prehistoric peoples early discovered the cleansing effect of water and were eager to enjoy it. To the ancient Egyptians, as to the more modern Mohammedans, it is a part of their religious service, while among the early Hebrews it was not only one of the first purificative duties but it was positively prescribed by the Mosaic law in certain specified cases of uncleanness. Thus the Jew who had no bath in the court yard of his house, bathed in the streams, or, later, in the mixed, or public bath, while, besides water, bran was often used for ceremonial cleansing, especially by the women, just as the modern Arabs, when unable to obtain water, rub themselves clean with sand. See ABLUTION.

The earliest and most common form of bathing was, of course, that of swimming in rivers, and bathing in such rivers as the Nile and the Ganges was supposed to possess a religious significance which tended to make the practice a very popular one. The use of oils and the greater luxury of perfumes became customary on occasions of sanitary bathing at a very early period. In later times the more wealthy Romans possessed many kinds of oils and pomades which they brought to the baths, that their bodies might be anointed with them, while even the poorest classes rubbed their bodies with flour of lentils after the bath.

The first reference to such a convenience as that of a public bath occurs in the Bible, where it is stated that the bathing 'pools' were sometimes sheltered by porticoes, but this was a simple invention when compared to the perfect bathing facilities which were afterward pro-

vided by the Greeks and Romans, while the praise lavished upon the baths of Darius by Alexander the Great indicates that the Persians must also have possessed beautifully appointed bathing facilities.

The public baths, which began to be built in Rome shortly after Clodius had succeeded in supplying the city with water from Praeneste, soon became one of the most popular institutions of the nation and emperors vied with their predecessors to construct the largest and most elaborate establishments. As the result, enormous buildings were erected and these contained not only the bathing apartments but the gymnasia and libraries, or even theatres, and the most able writers of that time admit their inability to describe the magnificence and luxurious appointment of many of these palaces of cleanliness and pleasure. For example, Seneca says, "To such a pitch of luxury have we come that we are dissatisfied if we do not tread on gems in our baths." These baths, or *thermæ*, as they were called, contained swimming baths, warm baths, vapor baths and baths of hot and cold air.

Wherever the Romans settled they built public baths, and wherever they found hot springs or natural stufæ, they made use of them, thus saving the expense of heating, as at Baiæ and Bath. The charge made at a public bath was only a quadraus, or about one-quarter cent.

The delicacy of feeling concerning the bathing together of sexes which is said to have existed in early times certainly did not extend to the days of the empire, when it was not at all uncommon for men and women to make use of the same bath and it was probably due to this practice that the public baths came to be condemned by the early Christians as places of unbounded license. While admitting the usefulness of the bath from the standpoint of cleanliness and health, the Church fathers insisted that baths should be taken for such purposes only and not for pleasure. It was at this time when the bath reached the height of luxuriousness; when rich citizens had magnificent private baths of their own attached to their villas, and when elaborate private bathing houses might be had for hire in all the cities; conditions which continued until about the 5th century, when the destruction of Rome's water supply by the Huns and the many disasters which accompanied the downfall of the empire tended to turn popular attention from the delights of the *thermæ*. How thoroughly the bath afterward fell into disuse, however, is a matter which historians have been unable to determine. In the East, of course, where the heat and dust make its use obligatory, there has never been any diminution in the practice, and while in Europe, for a time at least, perfumes were used to offset any disagreeable odors that might arise from uncleanliness of the person, this condition could not have existed for many centuries, for, by the latter part of the 12th century, the popularity of the bath had become so well re-established that there was scarcely any large city in Europe which did not possess well-patronized hot-air bathing houses. Again in the 17th century, when the Turkish bath was introduced, there was another revival of interest in the matter of personal cleanliness, and people of all classes flocked to the baths, or Hummans, as they were called, to enjoy the new luxury that had been imported from the East.

While the Turkish bath, not to mention the Russian and Egyptian baths, are so similar to the hot-air baths of the Romans that many authorities have regarded them as nothing more or less than an outgrowth from the latter, the fact that the principle of the vapor bath has been known to many nations, and has even been found among savages, or races in an early stage of civilization, has led to the more recent and counter theory that the hot-air boxes of the Mexicans, the "medicine sweats" of the American Indians, the small baths of the ancient inhabitants of Scotland and Ireland, and the larger vapor baths of Japan, like those of Turkey and Russia, are of just as independent origin as those of the more ancient Rome. However that may be it is at least certain that while this luxurious form of bathing was largely responsible for the neglect of the cold bath and the sea-bathing, the virtues of which have been appreciated only within comparatively modern times, it is largely due to the pleasureable sensations resulting from this form of bath that the various nations of the world have not neglected those principles of cleanliness upon which the good health of a people so vitally depends.

**The Cold Bath.**—The first effect of the cold bath (at a temperature say from 50° to 70°) is to produce a shock to the nerves of the skin. In the case of the cold bath as ordinarily used, the application is short, and the more near to the temperature of 50° F. the water is the shorter it should be. Following the first action is reaction, during which the blood returns to the skin, the blood-vessels of which relax, and a pleasant sensation of glow, spreading rapidly over the surface, is experienced. This reaction is aided by rapid friction of the skin, as by towels, and if, after drying, the body is quickly clothed and exercise engaged in, the total effect of the bath is stimulating, inducing a feeling not only of warmth but also of vigor. The length of time the cold may be applied without interfering with the setting in of a proper reaction depends on the individual. A mere instant's immersion is sufficient for some, others can bear several minutes, while some could not bear complete immersion of the body at all, a feeling of coldness and shivering lasting for hours after it. Obviously for such persons the full cold bath is not suitable, and the cold wet towel, cold wet sponge, wet sheet, etc., may be used instead, and may gradually lead up to the full cold plunge, which may thus be made tolerable and enjoyable. The cold bath is not usually suitable for the old and the delicate. The action of the cold water may be intensified by showering it or spraying it on the body by means of various arrangements of pipes, etc. The morning or early part of the day is the suitable time for all such kinds of baths. Persons who are thus habituated to the use of cold water are less susceptible to the influence of cold and can stand longer exposure than others.

**Tepid Baths** (temperature 85° to 95°) produce neither depression nor excitement, and are therefore suited for all. They are the best when prolonged immersion is desired, as in the treatment of chronic skin and nervous diseases.

**The Warm Bath** (temperature 96° to 104°) is particularly serviceable in removing feelings of fatigue. It should quicken only slightly the circulation, and bring an additional quantity of blood to the skin. It is by this means that it removes the tired feeling from exhausted muscles, for it promotes the removal from the tissues of the waste products, which have accumulated during the period of activity, and whose presence in the muscles is the cause of the feeling of weariness. After prolonged labor, or a long fatiguing walk, or prolonged exposure to damp and cold, or after, for example, the exertion of much dancing, nothing is so restorative and refreshing as a warm bath. When employed for such purposes, the person should end with a spray or douche, or simple sponge of tepid water (70°) if he is about to go to bed, or with a warm spray, quickly reduced to cold, before dressing to go out. Warm baths are largely employed in feverish affections of children for promoting the action of the skin; and they are a safe resort in the convulsions of children, cold being at the same time applied to the head.

**The Hot Bath** (temperature 102° to 110°) acts in a more pronounced way upon the heart and nervous system than the merely warm bath. If very hot it powerfully excites the heart, whose action, indeed, it may stimulate to violence. The brain is also influenced by the more copious flow of blood through it, due to the vigorous action of the heart. These effects, however, are largely counterbalanced by the increased flow of blood to the skin. But the prolonged use of hot baths is weakening, and the temporary strain thrown upon the heart and blood-vessels and brain would be hurtful to many. The bather should be immersed to the chin; the hair is damped with cold water and a thin cold cloth is wrapped about the head. Cold water may be drunk if desired. The bath should last 20 minutes, or less if oppression is felt. It should conclude, as directed for warm bath, with tepid douche or sponging, or with warm spray quickly reduced to cold. The hot bath should not be used in the morning or early part of the day, or at any time except before going to bed, unless the person is properly cooled down before dressing and going out.

**The Hot-air Bath** is one of the most powerful ways of stimulating the activity of the skin. The person, unclothed, is placed in an apartment which is heated by means of furnaces, the air being dry. In a longer or shorter time, according to the heat of the air and the condition of the bather, the perspiration bursts out upon the skin, becoming very copious, so that the whole body is bathed in sweat. A very high temperature may be borne so long as the air is quite dry, for the sweat passes rapidly off from the body in the form of vapor, removing a large quantity of heat, and thus the temperature of the body does not rise, unless the air is very hot, when the heat of the body usually increases by two or three degrees. The same high temperature could not be borne if the air were moist, as in the case of a vapor bath, for then the air is saturated or nearly so with moisture and cannot take up more, or can take up very little. Marked oppression, difficulty of breathing, fullness in the head, faintness, etc., would then speedily arise. When the air is quite dry, however, a high temperature, for example that of 180° F., can usually be endured with ease, and even above 212°. Not only the activity of the skin but the action of the heart and of breathing are greatly increased. It is thus not suited for everyone, certainly not in its full form for anyone with weak heart or vessels and for very full-blooded persons.

**The Turkish Bath.**—The hot-air bath is usually obtained with other accessories in the form of the Turkish bath. This bath was adopted by the Turks from the Romans, who derived it from the Greeks. The bather enters the dressing-room (Rom. *vestiarium*), which is heated to an ordinarily comfortable temperature. Beyond this room there are, in the fully-equipped Turkish baths, three rooms, separated from the dressing-room by well-padded doors. The first of these corresponds to the Roman *tepidarium*, the warm room, in which the temperature is from 115° to 120°; beyond this and separated from it by heavy curtains is the hot room, or *calidarium*, in which the temperature ranges from 120° to 140°; and still beyond is the hottest room, called also the flue room, corresponding to the Roman *laconicum*. Here the temperature is not below 150°, usually 175° to 180°, but may be 200° and upward. Every Turkish bath has at least two rooms beyond the dressing-room, one in which the temperature may readily be raised to 140° or thereabout, and one beyond it in which the highest temperatures may be obtained.

When a full Turkish bath is taken the following is the usual course: The bather undresses in one of the curtained recesses of the dressing-room, girds a towel or similar cloth round his loins, and carrying a bath-towel over the arm passes into the warm room. Here he stays only long enough to wet the hair with cold water, and perhaps drink of it, and then passes on through the hot room, into the hottest room. Spreading his towel over a chair he reclines on it, wets his head with cold water, and drinks at his pleasure, but not too copiously, of cold water, which the attendant will bring him. Here he remains five or 10 minutes. By this time the whole body will be bedewed with perspiration; and the bather passes out into the room next in temperature, the hot room, where he reclines for another 10 or 15 minutes. Then he passes to the warm room, lower in temperature than the former, and here he reclines till the attendant is ready for him, when he proceeds to the washing room. Here he lies on a table and the attendant goes over the whole body, rubbing the surface, and thus removing all loose effete skin, grasping and kneading the muscles, bending joints and so on. He is then rubbed over with soap, scrubbed and washed down, and lastly douched with warm and then tepid and cold water. From this room the bather passes out quickly, plunges through a cold bath, and regains the dressing-room, where he is quickly dried down with warm dry towels. He is then enveloped in a dry bath-towel, and so attired he lies down on his couch in the dressing-room, covered over with a light rug or blanket, till his skin assumes its natural degree of warmth. When the skin is cool and dry, usually in 15 or 20 minutes, the bather dresses deliberately, and may then go out. The ordinary duration of the full bath, from the flue room to the washing room, is

from 40 minutes to an hour. The full bath, however, is suited chiefly for those accustomed to it, for the healthy and robust.

The vapor bath acts upon the body much as the hot-water bath does, but it acts more powerfully, though the effect of the heat is not so quick since vapor is a slower conductor of heat than water. This bath can, therefore, be borne hotter than a water bath, but the high temperature cannot be borne long, for the vapor does not permit of the loss of heat from the body as hot air does. The temperature of the vapor bath cannot be comfortably endured above 120° F. The vapor bath is characteristic of the Russian baths. It is taken in a chamber filled with vapor, which is thus not only applied to the surface of the body but also inhaled. This makes it still more oppressive. It may be used, however, in a simple form, in which the vapor is not breathed, by the person sitting on a chair, surrounded from the neck downward by blankets, which envelop the chair also and hang to the ground. Under the chair is placed a shallow earthenware or metal dish, containing boiling water to the depth of three or four inches. In the water are placed a couple of red-hot bricks. Or under the chair may be placed a spirit-lamp, supported above it being a shallow pan containing boiling water. Such baths are very useful for catarrh, for rheumatic and neuralgic pains, sciatica, etc., as well as for cases where excessive action of the skin is desired to relieve deeper organs, for example the kidneys. Ten to 15 minutes are long enough for exposure in the vapor bath.

**Sea-Bathing.**— Ordinary sea-bathing is of course cold, and produces the stimulating effects described in regard to the cold bath. There is besides the additional stimulus due to the salt, so that sea-bathing acts as an invigorating tonic. It is not, however, suited for everyone, and is taken much too indiscriminately. It is also indulged in without due precaution. It is a very common error for persons to remain in the sea too long, the result being shivering, blueness of the skin, difficulty in recovering warmth, headache, etc. Persons who are anæmic,— that is, of deficient quality of blood,— ought not to indulge in sea-bathing without advice, and failing advice had better try first a salt-water bath at home. Persons who have suffered from any internal complaint ought also to refrain. The best time for sea-bathing is in the morning. It should never be indulged in immediately after a meal, when the business of digestion is going actively forward. A good time is before lunch or early dinner, for which the brisk walk home after the bath will prove an excellent appetizer. Neither should sea-bathing be engaged in immediately after very active exercise, when the body is in a state of very active perspiration or in a condition of fatigue. At the same time, moderate exercise before the bath is unobjectionable, and the body ought to be comfortably warm. The person should undress quickly and plunge in bodily, wetting the whole body at once. During the bath exercise should be active, as in continued swimming. Children, because of the little resisting power of their bodies, are readily depressed by sea-bathing. They may be gradually accustomed to it; but they ought not to be forcibly immersed to their aversion and terror. Sea-baths may be imitated at home by the addition of common salt or sea salt to water. The benefits of open-air bathing,— sea or river,— are not limited, of course, to the action of the water, but are increased by the action of the fresh air, the respiration of which is stimulated by the bath, and by the exercise in the open air invariably indulged in afterward.

There are many kinds of medicated baths, which have, or are supposed to have, special properties, valuable for diseased conditions, because of containing various saline substances dissolved in them. Such baths may be artificially prepared by the addition of the salts to the water, or natural mineral waters may be used for the purpose. Mud-baths are recommended for special reasons.

Various arrangements are employed for accentuating the effect of the water, whether used hot or cold, or for applying it to particular parts of the body. The spray is one well-known variety of bath. The douche is a jet of water directed upon some part of the body through a 1½-inch pipe, the force of the water, quantity discharged and temperature being capable of modification. It at first lowers the vitality of the part to which it is applied, but reaction sets in quickly, so that its whole effect is stimulating, quickening tissue change. The douche may be used hot or cold, or one after the other in rapid succession, a change which is most stimulating of all. In old-standing complaints, thickenings about joints, stiff joints, etc., it is a very useful application. In the case of the descending douche, the pipe is 10 to 15 feet above the floor level, and for the horizontal douche the pipe is four feet above floor level. In the former case it is played first on the spine, and then shoulders, hips, arms and legs in succession. At the close it is directed on to the chest and head, the force of the water being broken by the hands. In the latter case the back, chest, arms and legs are douched in the order named, while the patient rubs himself vigorously. Before beginning the head is wet with cold water, and is douched last, the force of the water being broken. The process should last scarcely two minutes.

The sitz-bath or hip-bath is a means of limiting the application of the water to the hips and neighboring parts. The form of the bathing-tub is such that the person has the bath in the sitting posture, the limbs and upper part of the body being out of the bath. The sitz-bath, hot or cold according to circumstances, is in much use for abdominal and liver complaints, and specially for feminine ailments. Its soothing effects used hot in such disorders are marked. Altogether the use of the bath, in association with treatment by medicine, is of the highest value in numerous disorders, rheumatic, gouty, digestive, febrile, etc. In particular, the Turkish bath, under due superintendence, may produce surprising results, from checking a simple cold upward. See also HYDROTHERAPY.

**BATH**, England, city in Somersetshire, 107 miles west of London. It is beautifully situated on the Avon, in a narrow valley bounded on the northeast and southwest by hills and widening on the northwest into rich and extensive meadows. The Avon is navigable from Bath to Bristol. Bath is noted for its places of amusement, its fine streets and the

magnificence of its public buildings. The houses are of superior construction, built of freestone, obtained from the hills about the town. The Abbey Church ranks as one of the finest specimens of perpendicular Gothic architecture. The beauty and sheltered character of its situation, the mildness of its climate and especially the curative efficacy of its hot chalybeate springs have long rendered Bath a favorite fashionable resort. The four principal springs yield no less than 184,000 gallons of water a day; and the baths are both elegant and commodious. The temperature of the springs varies from 109° to 117° F. They contain carbonic acid, chloride of sodium and of magnesium, sulphate of soda, carbonate and sulphate of lime, etc. Bath was founded by the Romans and called by them Aquæ Solis (waters of the sun). Among the Roman remains discovered here have been some fine baths. The height of its prosperity was reached, however, in the 18th century, when Beau Nash was leader of the fashion and master of its ceremonies. Since then, although it still attracts large numbers of visitors, it has become the resort of valetudinarians chiefly. Jointly with Wells it is the head of a diocese and returns two members to the House of Commons. Bath has many handsome public buildings, among them being the Guild Hall, technical schools, an art gallery and reference library, and the Royal Literary and Scientific Institution. There are several fine parks, including the Victoria Park, of about 50 acres, containing a botanical garden and an excellent theatre. It also maintains a museum and public markets. Pop. 50,729.

**BATH**, Me., city, port of entry, and county-seat of Sagadahoc County, on the Kennebec River and the Maine C. Railroad; 12 miles from the ocean and 30 miles south of Augusta and 36 miles northeast of Portland. It is admirably situated as a commercial port; has regular steamboat connections with Boston and Portland; is principally engaged in shipbuilding, both wood and iron; and manufactures brass and iron goods, oil cloth, shoes and lumber. The Bath Iron Works built the gunboats *Machias* and *Castine*, the ram *Katahdin* and several of the modern torpedo boats for the United States navy. Bath has a large coastwise and foreign trade in ice, coal, lumber, hay, iron and steel; and contains four national banks, public library, a costly system of waterworks, and property valued at $7,000,000. Bath dates from a mission settlement of 1660. It was incorporated as the town of Bath in 1781 and received a city charter in 1847, revised in 1899, which provides for a one-year term mayor and a bicameral city council. Pop 9,396.

**BATH**, N. Y., town and county-seat of Stuben County, on the Cohocton Creek, 36 miles west of Elmira, on the Buffalo branch of the Erie and the Delaware, L. & W. railroads, It is the seat of the New York State Soldiers and Sailors' Home the Davenport Home for Orphan Girls and Haverling Academy; is principally engaged in agriculture; and manufactures shoes, harness, window shades, cycles, automobile engines and aeroplanes. Bath was settled in 1793 and incorporated in 1816. Pop. 3,884.

**BATH, Knights of the**, an English order of chivalry established in 1725 by George I. By the book of statutes then prepared, the number of knights was fixed at 38, namely, the sovereign and 37 knights companions. The King allowed the chapel of Henry VII, in Westminster Abbey, to be the chapel of the order. The limits of the order were extended by the Prince Regent in 1815, to reward the distinguished services of officers during the wars; and again in 1847, when it was also opened to civilians. It was further enlarged in 1861. It now consists of three classes, each of which is subdivided into (1) military members; (2) civil members, and (3) honorary members, consisting of foreign princes and officers. The first class consists of Knights Grand Cross (G.C. B.); the second of Knights Commanders (K.C.B.); and the third of Companions (C.B.) Mr. James W. Gerard, formerly United States Ambassador to Germany, was decorated by King George with the G.C.B. in 1917. The title of "Sir," however, can only be assumed after the ceremony of the "accolade" (q.v.) has been performed by the sovereign. The dean of Westminster is dean of the order. The ribbon of the order is crimson, and its motto, "Tria juncta in uno."

**BATH HOUSES, Public.** Bathing as serving for cleanliness, health and for pleasure, has been almost instinctively practised by nearly every people. The most ancient records mention bathing in the rivers Nile and Ganges. From an early period the Jews bathed in running water and used hot and cold baths; so also did the Greeks. The Persians must have had handsomely equipped baths, for Alexander the Great admired the luxury of the bath of Darius. But the baths of the Greeks and probably of all Eastern nations were on a small scale as compared with those which eventually sprang up among the Romans.

In early times the Romans used, after exercise, to throw themselves into the Tiber. Next, when ample supplies of water were brought into the city, large *piscinæ*, or cold swimming baths, were constructed, the earliest of which appear to have been the *piscina publica* (312 B.C.) near the Circus Maximus, supplied by the Appian aqueduct, the *lavacrum* of Agrippina and a bath at the end of the Clivus Capitolinus. Next, small public as well as private baths were built; and with the empire more luxurious forms of bathing were introduced, and warm baths became far more popular than cold baths. Public baths (*balneæ*) were first built in Rome after Clodius brought in the supply of water from Praeneste. After that date, baths began to be common in Rome and in other Italian cities. In fact, private baths gradually came into use, being usually attached to the villas of the wealthy citizens. Mæcenas was one of the first who built public baths at his own expense. After this time, each emperor, as he wished to ingratiate himself with the people, lavished the revenues of the state in the construction of enormous buildings, which not only contained suites of bathing apartments, but included gymnasia, and sometimes even theatres and libraries. Such establishments went by the name of *Thermæ*. The principal thermæ were those of Agrippa (21 B.C.), of Nero (65 A.D.), of Titus (81 A.D.), of Domitian (95 A.D.), of

Caracalla (217 A.D.), and still later those of Diocletian (302 A.D.) and of Constantine (317 A.D.). There are said to have been 850 baths altogether in Rome at one period. The technical skill displayed by the Romans in rendering their walls and the sides of reservoirs impervious to moisture, in conveying and heating water, and in constructing flues for the conveyance of hot air through the walls, was of the highest order. The Roman baths contained swimming pools, warm baths of hot air and vapor baths. The *piscinæ* were often of immense size — that of Diocletian being 200 feet long — and were adorned with beautiful marbles. Wherever the Romans settled, they built public baths, and the ruins of such have been found in all the countries which at any time were subject to the Roman eagles — Gaul (France), Spain, Germany, England, etc. It may be well to point out that none of those public baths was free; on the contrary they were usually patronized only by the upper classes. It has remained for the modern city to adopt free public baths as part of its service to the public.

Although they never wholly gave up cold-water bathing, the Romans practised chiefly warm bathing. This, of course, is more luxurious, but when indulged in to excess is enervating. The unbounded license of the public baths, and their connection with modes of amusement that were condemned, led to their being to a considerable extent proscribed by the early Christians. The early Fathers wrote that bathing might be practised for the sake of cleanliness, but not for pleasure. About the 5th century many of the large thermæ in Rome fell into decay. The cutting off of the aqueduct by the Huns, and the gradual decrease in population contributed to this. Public bathing, however, was kept up in full vigor in Alexandria and elsewhere. Hot bathing, and especially hot air and vapor baths, were adopted by the Mohammedans; and the Arabs brought them with them to Spain. The Turks at a later time carried them high up the Danube. The Crusaders also contributed to the spread of baths in Europe, and hot vapor baths were especially recommended for the leprosy so prevalent in those days. After the commencement of the 13th century, there were few large cities in Europe without vapor baths. According to Erasmus, they were common at the time of the Reformation in France, Germany and Belgium; they seem to have been a common adjunct to inns. After a time they became less common, but the reason for the decline is not clear.

In England the next revival of baths was at the close of the 17th century, under the Eastern name of *hummans*, or the Italian name of *bagnios*. These were avowedly conducted on the principle of the Turkish baths of the present day. But there were several considerable epochs in the history of baths, one in the commencement of the 18th century, when Floyer and others recalled attention to cold bathing, of which the virtues had long been overlooked. In the middle of the century also, Russell and others revived sea bathing in England, and were followed by others on the Continent, until the value of sea bathing became fully appreciated. Later in the same century, the experiments of James Currie of the action of the complete or of partial baths on the system in disease attracted attention; and though forgotten for a while, they bore abundant fruit in more recent times.

In the 4th decade of the 19th century free cold swimming baths were revived in Germany. In England, since 1842, public swimming baths, besides separate baths, have been supplied to the public at very moderate rates, and floating baths in rivers, always known in some German towns, have become common wherever there are flowing streams. The better supply of cities with water during the 19th century has greatly aided the movement to extend bathing facilities to the public. In 1846, the British Parliament passed the first of a series of acts to encourage the establishment of public baths by the local authorities, but by 1865 only 25 boroughs had cared to provide bathing establishments for their inhabitants. About 1890 the city councils began to take up the matter energetically with authorization from Parliament; but it then increased so rapidly that almost every town or borough of 50,000 people now has its public bath open the year round and many smaller communities are similarly equipped. About 50 German cities maintain public baths throughout the year and many of the establishments in the larger cities are models of their kind in construction and equipment. On the Continent generally and in Scandinavia only the large cities are thus provided; but in Russia they are almost universal in places of any size.

In the United States, though public baths have existed since 1866 until about 1895 in a few water-side cities, they were confined to cold swimming-baths sunk in the sea or river near the shore, and open only during warm weather; of excellent service for the comfort of those not too far off, but too limited in scope to be of the highest value to the general public. Not only were they closed for more than half the year, but to those who must walk more than half or three-quarters of a mile to obtain a bath (their utility being for the poor), their value as refreshment in hot weather was neutralized by the needful exertion to reach them. Their use, therefore, depended on their distribution and relation to the water system. Thus, in Boston, where six were established in 1866, with 300,000 patrons during the first season, and extended to 14 in 1897, they were so located on the Charles River, at City Point and on South Bay, that a considerable part of the poorer population were within fairly easy distance of them. Only about a dozen United States cities had even these bathing facilities prior to 1895, and the first general movement in favor of year-round hot and cold baths was a reflex from Germany, about 1891. The first city in the United States to establish a free municipal bath supplied with hot and cold water was Chicago, which opened such a bath in 1894. Yonkers was the first city to establish free public baths open all the year. This bath was opened on Labor Day, 1896. Brookline, Mass., established free public baths in 1896, and Boston and Buffalo in 1897. The pioneer in the public bath movement in the country generally was Dr. Simon Baruch. It was he who closely investigated the working of the public bath systems in Germany and in other European countries and subsequently advocated, despite the strongest official opposition, the introduction of the system into the larger cities of the

United States. In 1890 his plans were adopted by the New York Association for Improving the Condition of the Poor and the following year this Association's "People's Baths" were completed and at once became a great popular success. Shortly afterward the trustees of the Baron de Hirsch Fund erected a public bath on Henry street, New York, and the Demilt Dispensary bath was opened about the same time. In 1895 the Riverside Association opened a public shower bath in West 69th street. Among other efforts by various charitable organizations for the provision of bathing facilities for the masses may be mentioned the floating hospital of the Saint John Guild, the Wayfarers' Lodge and the municipal lodging-house.

In this connection, a word may be said about what are known as "Mikveh Baths." These are very common in New York city and are usually located in the basement of tenements in the crowded sections. They are conducted as commercial enterprises, the charge for a bath usually ranging from 5 to 10 cents. At certain times of the year (e.g., the Passover) the use of these baths is compelled by religious custom for both men and women; and all women are required to use these pools regularly within seven days after menstruation. The method of using the bath is minutely prescribed in the Hebrew liturgy. The first compulsory legislation was by New York State in April 1895 (though a bathing and washing association was incorporated there in 1849); it obliged all cities of over 50,000 people to establish public baths and comfort stations, kept open the year round, with both hot and cold water, and 14 hours a day, and under such conditions as the local board of health judged proper; river, lake or sea baths not to be deemed a compliance with the act. Cities under 50,000, though not compelled, were permitted to use their funds or credit for the same object. The first city to comply, and perhaps the first in the United States to furnish such conveniences in their full extent, was Yonkers, N. Y., not within the compulsory section. This town opened one on Labor Day, 1896; and another of brick in 1898, with accommodations for 400 daily baths. Within the act, Buffalo opened its first in 1897; Albany, Rochester, Syracuse and Troy have since complied; and in New York the first one, five years after the act was passed, was opened in Rivington street in a closely-packed quarter, during 1900, at a cost of $100,000. It furnishes 3,000 baths a day of 20 minutes each, from 67 spray baths. In 1902 three additional municipal interior baths were contracted for in Manhattan, providing facilities each for 103 persons at one time.

At present New York maintains and operates under the jurisdiction of the borough presidents free public interior baths, free floating baths and a large public bathing beach at Coney Island. For the use of these baths no charge whatever is made (except at the seaside baths, where a fee of 10 cents is charged). In Manhattan there are 12 free public interior baths and 11 free floating baths (all of the latter, however, are not put in commission each year). Brooklyn has eight interior baths, a large public bath at the seaside, and in normal years two floating baths. The interior baths are open daily to the public from 6 A.M. to 10 P.M. and on Sunday from 6 A.M. to 1 P.M. Swimming pools represent a very important and attractive feature of these public baths. In addition the city provides baths in many of its public schools. Almost all of these are of the shower type. At present 67 schools are thus equipped and the High School of Commerce has a swimming pool as has the College of the City of New York. The seaside public bath at Coney Island is a substantial concrete structure containing 1,300 individual dressing rooms for women and 700 dressing rooms, each for eight persons, for men. In this manner 7,000 patrons are accommodated at one time. In a recent year (1914) there were over 10,000,000 free baths given by the city of New York in both floating and permanent baths. The average cost per bather during that year was a little over four cents. In Philadelphia the Public Baths Association was organized in 1895; but the first to be opened was in 1898, in a crowded quarter between Fourth and Fifth streets. It is a building of 2½ stories, 40 by 60 feet, constructed of brick and iron, with concrete floors and iron partitions. It cost about $30,000. It was built without a swimming pool, having only shower baths — a system favored where economy of space and water is essential; the People's Baths and the Baron de Hirsch Fund Baths in New York adopt the same plan. The Philadelphia establishment has a public laundry in connection with its own suit and towel laundry, where women and men in separate compartments can wash their clothing for a small fee, and single men make much use of it to wash their underclothing. Some of the old warm-season baths have since been made permanent, as in Newark, N. J., which so extended two in 1898, and in 1900 voted a third. Boston from 1897 to 1899 increased its public baths to 33 — 14 floating, 10 beach and 9 others; 17 south of the Common and 16 north; and prepared to erect permanent structures in each industrial section of the city. The first of these was opened at Dover street in 1898 — a fine brick and granite structure, with marble partitions and staircases, the whole with land costing $86,000. It has gymnasiums also, and medical directors for each sex to give courses of training, and for cases of accident or sudden illness. The intention is ultimately to make these baths places of public recreation, corresponding to the summer playgrounds; thus reaching in the 20th century the point at which the Romans had arrived in the first. Brookline, adjoining Boston, has a handsomely appointed permanent municipal bath house. The State of Massachusetts has erected several splendid bath houses at the prominent beaches. Pittsburgh, Worcester, Kansas City, Utica, Holyoke, Providence, R. I., and numerous other cities have built substantial public bathing establishments. Saint Paul, Minn., through the public spirit of Dr. Ohage, a German physician, now has a public playground, pavilion, etc., connected with permanent bath houses on what was till recently a waste island in the middle of the Mississippi, near the business centre of the city and between two main bridges. Like most of the other bath establishments, it is free, save a small charge for soap and towels; has free instruction in swimming, and is open every

day, including Sundays. The expensive amusement grounds at Pulaski Park, Chicago, include swimming pools and locker houses that cost $70,000. The deep pool is 40x60 feet and the shallower pool 60x180 feet. The establishment accommodates 500 bathers an hour. The installation of baths in public schools began in Germany, Göttingen leading the way in 1885 under the headship of the mayor and a professor in the university. In the United States it was first taken up in Boston and suburbs; in 1900 a number of baths were put into the Paul Revere School in the north end, and in Brookline swimming is a regular part of the school curriculum. But most of the school baths are confined to shower equipments. Many Y. M. C. A. branches, gymnasiums, clubs and hospitals now maintain semi-public bathing establishments, mostly equipped with showers but sometimes with pools.

Designs of modern municipal bath houses are credited mainly to Dr. Munnich, an army surgeon; the late Prof. Oscar Lassar; Goodwin Brown, a lunacy commissioner, and Dr. Simon Baruch, president of the American Association for Promoting Hygiene and Public Baths. Low fireproof buildings are preferred, with an abundant water supply through a main of at least four and preferably six inches diameter. The water should always be filtered, and the piping exposed. Concrete or brick construction is preferred, and the pools require excellent workmanship. Their sides are best made of glazed tile or marble. White walls and good light are desirable. The inflow of water to a pool should be such as to change the water in 24 hours. In addition to this regular flow, the pool should be wholly emptied once or twice a week. Nude bathing is encouraged, as it assists the bathing masters in excluding the diseased from the pool.

Where funds do not permit complete bathing establishments, tent baths, supplied with showers, may be utilized, as at Baltimore. Beach baths consist usually of floating platforms connected with a pier by a bridge. The centre of the platform is opened for the pool, which is separated from the outside water by woodwork. The dressing rooms are on the margins of the platform. Such baths are in increasing use at beaches all over the United States.

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**BATHOLITH,** or **BATHOLITE,** a large intrusive mass of igneous rock, irregular in shape, which has melted its way up across the enclosing beds. They differ from laccoliths (q.v.) in not being intruded between, but rather across, the beds. They are usually many miles in extent, and often form the cores of mountain ranges, as in the case of the Sierra Nevada. Bodies of the same form, but smaller, are often called stocks or bosses.

**BATHOMETER,** an instrument for measuring the depth of the sea or any large body of water without a sounding line, the name being derived from *bathos,* depth. It was invented by Dr. C. W. Siemens after 1859 as an adjunct to the laying of submarine telegraphic cables, so as to keep a continuous record of the sea depth below a moving ship. The principle of the instrument is based upon the gravitation of the earth, total gravitation being represented by a column of mercury, which rests upon a thin steel diaphragm embossed in such a way that its centre can move within a small range freely up and down under the influence of the mercury column without encountering any frictional resistance. The column ends in a cup, and mercury is poured into both cup and pipe up to a certain point, the space above being filled with water, alcohol or a liquid of less density, this latter terminating in a spiral tube laid upon a scale at the top of the instrument. The centre of the diaphragm which supports the column of mercury is carried by two or more carefully tempered steel springs, so adjusted that their elastic pressure balances exactly the dead weight of the column of mercury resting upon the diaphragm, the result being that the diaphragm retains its horizontal position. Inclosed in an air-tight casing closed by a disc of plate glass, the instrument records by an ingenious compensating arrangement the natural balance of the elastic gravity forces on the scale, from which readings are made. Consult Siemens, 'The Bathometer' (1879).

**BATHORY,** bā'tō-rē, or **BATTORI,** a celebrated Hungarian family which in the 15th century became divided into two branches, one of which gave Transylvania five princes, and Poland one of its greatest kings.

1. STEPHEN: b. 1532; d. Grodno, 12 Dec. 1586. He entered the army and so distinguished himself that when the death of John Sigismund Zapolya, nephew of Sigismund II, King of Poland, in 1571, left a vacancy in the sovereignty of Transylvania, Stephen Bathory, without courting the honor, was unanimously elected. When the throne of Poland became vacant by Henry of Valois quitting the country in order to mount the throne of France, Stephen Bathory was elected to succeed him in 1575, and was crowned along with his Queen, Anne, daughter of Sigismund Augustus, at Cracow, in 1576. He found the kingdom torn asunder by faction, the people enervated by long peace, the treasury exhausted and the army without discipline. He therefore gave his first attention to internal improvement, but had no sooner effected it than he determined to recover the Polish territories of which the Tsar of Muscovy had managed to possess himself by fomenting dissensions. He accordingly declared war against him, beat him at all points and compelled him to accept a disadvantageous peace. Under Stephen Bathory Poland enjoyed a comparative tranquillity to which it had

long been a stranger, and he was meditating important constitutional reforms, which promised to make that tranquillity permanent, when he died suddenly.

2. SIGISMUND, nephew of Stephen: b. 1572; d. 1613. He became Voivode or Prince of Transylvania in 1581, but did not assume power till 1588, at the age of 16 years. He shook off the Ottoman yoke, and, by the great talents he displayed, had begun to give hopes of reigning gloriously as an independent sovereign, when, from mere fickleness and eccentricity of character, he voluntarily resigned his dominions to the Emperor Rudolph II in return for two principalities in Silesia, a cardinal's hat and a pension. With the same fickleness, however, he immediately repented of the act, and, availing himself of an invitation by the Transylvanians, returned, and placed himself under the protection of the Porte. The talent which he had displayed, and the good fortune which had followed him in early life, appeared now to have forsaken him; the Imperialists defeated him in every battle, and he was obliged to throw himself on the mercy of the Emperor, who sent him to live out the rest of his days at Prague. Historians attribute inherent insanity to the Bathory family.

**BATHS OF AGRIPPA,** the earliest of the Roman thermæ; erected by Marcus Agrippa in the reign of Augustus. They stood in the Campus Martius, about 20 feet behind the Pantheon. In 1881, on the removal of some houses, ruins were found of a great hall paved with marble and lined with fluted columns.

**BATHS OF CARACALLA,** one of the most magnificent of the Roman thermæ, in the southeast part of the city, in which 2,300 men could bathe at the same time. They were begun in 206 A.D. by Caracalla, and completed by Severus. There were stadia for the athletes, galleries for the exhibition of paintings and sculpture, libraries, conversation halls, lecture-rooms, etc. The mechanical skill displayed in their construction was very great. The ruins which still remain are among the most remarkable in Rome.

**BATHS OF DIOCLETIAN,** the most extensive of the Roman thermæ; in the northeast part of the city, and covering most of the ground between the Porta Collina and the Porta Viminalis. Over 3,000 persons could bathe in them at the same time. They contained a library, picture-gallery, odeum, etc. Michelangelo transformed the great hall of the Tepidarium into a nave for the Church of Saint Marie degli Angeli. One of the *laconica* (hot rooms) forms the vestibule of the church.

**BATHS OF TITUS,** a structure on the Esquiline Hill in Rome; built by the Emperor Titus. Considerable ruins are found northeast of the Coliseum.

**BATHSHEBA,** băth-shē'bā, or băth'shĕ-ba, wife of Uriah, the Hittite, whose story is told in 2 Sam. xi. David committed adultery with her, then caused her husband to be slain, and afterward took her to wife. These sins displeased Jehovah, who sent the prophet Nathan to David with the parable of the ewe lamb. David bitterly repented, but yet was punished. Bathsheba was the mother of Solomon, whose succession to the throne she took pains to secure. She is afterward mentioned in the history of Adonijah, in the title of Psalm li, and among the ancestors of Christ (Matt. i, 6).

**BATHURST, Allen** (EARL), English statesman: b. 1684; d. 1775. He was a zealous opponent of the measures of Sir Robert Walpole's ministry, and the intimate friend of Bolingbroke, Pope, Addison and other great writers of the time. The earldom was created in 1772.

**BATHURST, Henry** (2d EARL), son of the preceding, English statesman: b. 1714; d. 1794. In 1771 he was made Lord High Chancellor of England. He wrote 'Theory of Evidence,' etc.

**BATHURST, Henry** (3d EARL), son of the 2d Earl, English statesman: b. 22 May 1762; d. 1834. In 1807 he became president of the board of trade; in 1809 Secretary for Foreign Affairs, and in 1812 Secretary for the Colonies, a post held by him for 16 years. He was also president of the council under Wellington, 1828–30.

**BATHURST,** Africa, town on the island of Saint Mary's, near the mouth of the Gambia, and capital of the British colony, Gambia. The town is exceptionally clean and contains government houses, barracks and a hospital. Facing the river are the stores of the European merchants. There are a number of expert shipbuilders in Bathurst. Its trade is chiefly in gum, bees'-wax, rice, tobacco, cotton, rubber, fruit, ground-nuts, hides, ivory and gold, bartered for clothes and cutlery. The population in 1911 numbered about 5,000, including the Jollofs which tribe inhabits the district in the vicinity of the town.

**BATHURST,** Australia, the principal town in the western district of the colony of New South Wales on the south bank of the Macquarie River, 144 miles west of Sydney, 2,153 feet above sea-level and surrounded by hills. It has wide, well-laid-out streets crossing each other at right angles, with a central square planted with trees. The public buildings include the Anglican and Roman Catholic cathedrals and churches for Baptists, Congregationalists, Wesleyans, Presbyterians and others; courthouse, jail and town-hall, post and telegraph offices; a hospital, numerous schools, a school of arts, etc. There are several tanneries, a coach factory, railway workshops, breweries and flour mills. Soap, candles, glue, boots and shoes and furniture are also extensively manufactured. The city was founded in 1819 and was the first settlement beyond the Blue Mountains, which were long believed to be impassable. In 1851 there were discoveries of gold here and this, with copper and silver, is the chief mineral product. Fine statuary marble is quarried. The whole district is admirably adapted to pastoral pursuits, and about 250,000 acres are under cultivation. Corn, barley, wheat, fruit and tobacco are the chief products. It is well watered and, being 2,150 feet above sea-level, has a moderate temperature. Pop. (1911) 8,575.

**BATHURST INLET,** an inlet of the Polar Sea, projecting due south about 75 miles out of Coronation Gulf. It is in a direct line

between the magnetic pole and Great Slave Lake, and about 300 miles from each.

**BATHURST ISLAND**, the name of two islands: (1) An island off the northeast coast of Australia, just west of Melville Island, and separated from the mainland of Australia by Clarence Strait on the south, and from Melville Island by Apsley Strait; (2) an island in the Arctic Ocean, discovered by Parry in 1819, lying due south of Grinnell Land, and the most eastern of the group called Parry Islands. It is separated from North Somerset on the south by Barrow Strait, and from North Devon on the east by Wellington Channel.

**BATHYBIUS**, the name given by Huxley, in 1868, to a supposed organism, a bit of unorganized protoplasm, found at the sea-bottom at great depth. It was structureless and contained numerous calcareous concretions. Huxley abandoned the idea that it was a living organism. Afterward Bessels gave the name "protobathybius" to a similar slimy moss dredged in Smith's Sound in 92 fathoms, possibly the remains of protozoa or sponges. Bathybius was not rediscovered by the Challenger expedition, and Sir John Murray suspected that the substance was only a gelatinous precipitate of sulphate of lime from sea water mixed with alcohol.

**BATHYCLES**, Greek artist, supposed to have flourished in the time of Solon, in the 7th century B.C. He was a resident of Magnesia, in Thessaly, on the Mæander, and constructed for the Lacedæmonians the colossal throne of the Amyclæan Apollo, at Amyclæ, near Sparta. Quatremère de Quincy, in his 'Jupiter Olympien,' has given an interesting view of the splendid god and his superb throne, designed from the description of Pausanias.

**BATHYMETRY**, the art of measuring depths in the sea, especially for the purpose of investigating the vertical range of distribution of plants and animals. An extensive series of such bathymetric measurements was made by H. M. S. *Challenger* (1872–76), the deepest sounding being 4,575 fathoms. In February 1900 the United States surveying ship *Nero* reported that in surveying for a proposed telegraphic cable line between Honolulu and Manila by way of Guam and Yokohama, she encountered the greatest ocean depths on record, two casts showing 5,160 and 5,269 fathoms respectively. See BATHOMETER.

**BATIFFOL, Pierre Henri**, French educator and writer: b. Toulouse, France, 27 Jan. 1861. He was educated at the Seminary of St. Sulpice, Paris; was a pupil of Duchesne in Paris and of De Rossi in Rome. He was ordained priest in 1884 and from 1898 to 1907 was rector of the Catholic University of Toulouse. He has devoted the greater part of his life to the study of ancient Christian literature and was an active opponent of Loisy. He has published 'Histoire du Bréviaire romain' (Paris 1893; new ed., 1911; English trans., London 1898); 'L'enseigmement de Jésus,' a statement of Catholic doctrine as opposed to Harnack's 'L'essence du christianisme' and Loisy's 'L'Evangile et l'Eglise' (Paris 1905); 'L'Eglise naissante et le catholicisme,' outlining the Catholic theory of Christian origins as against Ritschl, Harnack and others (Paris 1908; English trans., London 1911). This work was commended by Harnack for its depth of scholarship. He was one of the editors of the 'Etudes d'histoire des dogmes et d'ancienne littérature chrétienne' and 'Tractatus Origenis de Libris Sanctarum Scripturarum,' extracts from Hippolytus, Novatian and Origen.

**BATISTE**, bä-tēst, a fine, white, very compact linen, distinguished by its delicate, firm and uniform threads from every other linen texture. The name is derived either from the Indian material *bastas*, or from one of the early manufacturers of it, Baptiste Chambray, who lived in the 13th century, and from whom it was also called the cloth of Chambray, or Cambray; hence the English word cambric.

**BATJAN.** See BATCHIAN.

**BATLEY**, England, municipal and parliamentary borough, in the West Riding of York, eight miles south of Leeds, and just north of Dewsbury, with which it is united for parliamentary purposes. The houses are chiefly of stone, and rather irregularly built. Batley has an ancient parish church in the Early English style, a townhall, a grammar and a technical school, mechanics' institute, etc. The principal manufactures are heavy woolen cloths, Batley being the chief seat of the manufacture of heavy woolens. There are also iron foundries, machine-works, collieries, etc. The town was incorporated in 1868, and operates its gas and waterworks. It also maintains public baths, markets, a library and a cemetery. Pop. 31,429.

**BATNA**, bät'na, Algeria, a town of the department of Constantine, situated at the foot of Mount Tugurt, which is covered with fine cedar wood. The town contains a church and a mosque, and is an important military and trading post between the Sahara and Tell. Pop. (1911) 8,890.

**BATON**, bät-on, or bä-tŏn, a short staff or truncheon, in some cases used as an official badge, as that of a field marshal. The conductor of an orchestra has a baton for the purpose of directing the performers as to time, etc. In heraldry, what is usually called the bastard bar, or bar sinister, is properly a baton sinister.

**BATON ROUGE**, bät'on roozh', La., city, parish-seat of East Baton Rouge, and capital of the State. The name is derived from the French, meaning red baton or stick. The city is situated on the eastern bank of the Mississippi River, 90 miles northwest of New Orleans, and is on the Louisiana Railway and Navigation Company, the New Orleans, Texas and Mexico, the Southern Pacific and the Yazoo and Mississippi Valley railroads. It is picturesquely built on a bluff commanding an excellent view of the surrounding country. The houses are mostly of French and Spanish architecture. The river below the city is bordered by sugar-cane plantations, orchards of tropical fruits, private gardens and villas. It was the capital of the State from 1847 to 1864, when the seat of government was removed to New Orleans. On 1 March 1882, Baton Rouge was again selected as the capital city. The State capitol building here was completed in 1852 at a cost of $246,000. It was partially burned during the Civil War but was rebuilt in

1882. The Louisiana State University was organized here in 1860. The city also contains various State institutions, orphan asylum, penitentiary, deaf and dumb and blind asylums, State agricultural and mechanical college and agricultural experiment station. There are, among other public buildings, the courthouse, city hall, State capitol, Hill Memorial Library, Elks' home, post-office, collegiate institute, high school building and a national soldiers' cemetery.

There are varied and extensive manufacturing interests, including the largest southern refinery of the Standard Oil Company, cotton seed products, lumber, sugar, molasses, brick, artificial ice and agricultural implements. The city has national and State banks, several daily and weekly newspapers. There is a large and growing trade with the surrounding cotton and sugar growing regions, and a flourishing shipping trade is carried on in its excellent harbor. The city has a real property assessed valuation of $2,000,000, actual valuation $3,500,000, exclusive of the valuable city, parish and State property which is exempt from assessment. In addition to the above personal assessed property is $1,000,000, making a total assessment of $3,000,000, real value $5,000,000.

Baton Rouge adopted the commission form of government in 1913. The city was one of the earliest French settlements in Louisiana. A convention which met here 21 Jan. 1861, adopted the Ordinance of Secession on the 26th; the city was taken by the Federal army 7 May 1862. On 5 August the same year a Confederate force numbering 5,000 under command of Gen. John C. Breckenridge attacked the Federal garrison under Gen. Thomas Williams, but was repulsed after a fierce contest lasting two hours. General Williams was killed and both sides lost heavily. The city was shortly afterward evacuated but a month later was reoccupied by the Federal troops who remained until the close of the war. A former government arsenal here was destroyed during the war. Pop. about 17,000.

**BATONI,** bä-tō'nē, **Pompeo Girolamo,** Italian painter: b. Lucca 1708; d. Rome 1787. The manner in which he executed his paintings was peculiar. He covered his sketch with a cloth and began to paint the upper part on the left hand and proceeded gradually toward the right, never uncovering a new place until the first was entirely finished. Boni, who compares him with Mengs, calls the latter the painter of philosophy; the former the painter of nature. Batoni painted many altar-pieces and numerous portraits, including those of the Emperor Joseph and the Empress Maria Theresa in the imperial gallery. His greatest work is his 'Fall of Simon the Sorcerer,' which was ordered by Cardinal Albani for the church of Saint Peter's at Rome and was intended to be executed in mosaic. His 'Magdalene,' in Dresden, and his 'Return of the Prodigal Son,' in Vienna, are celebrated.

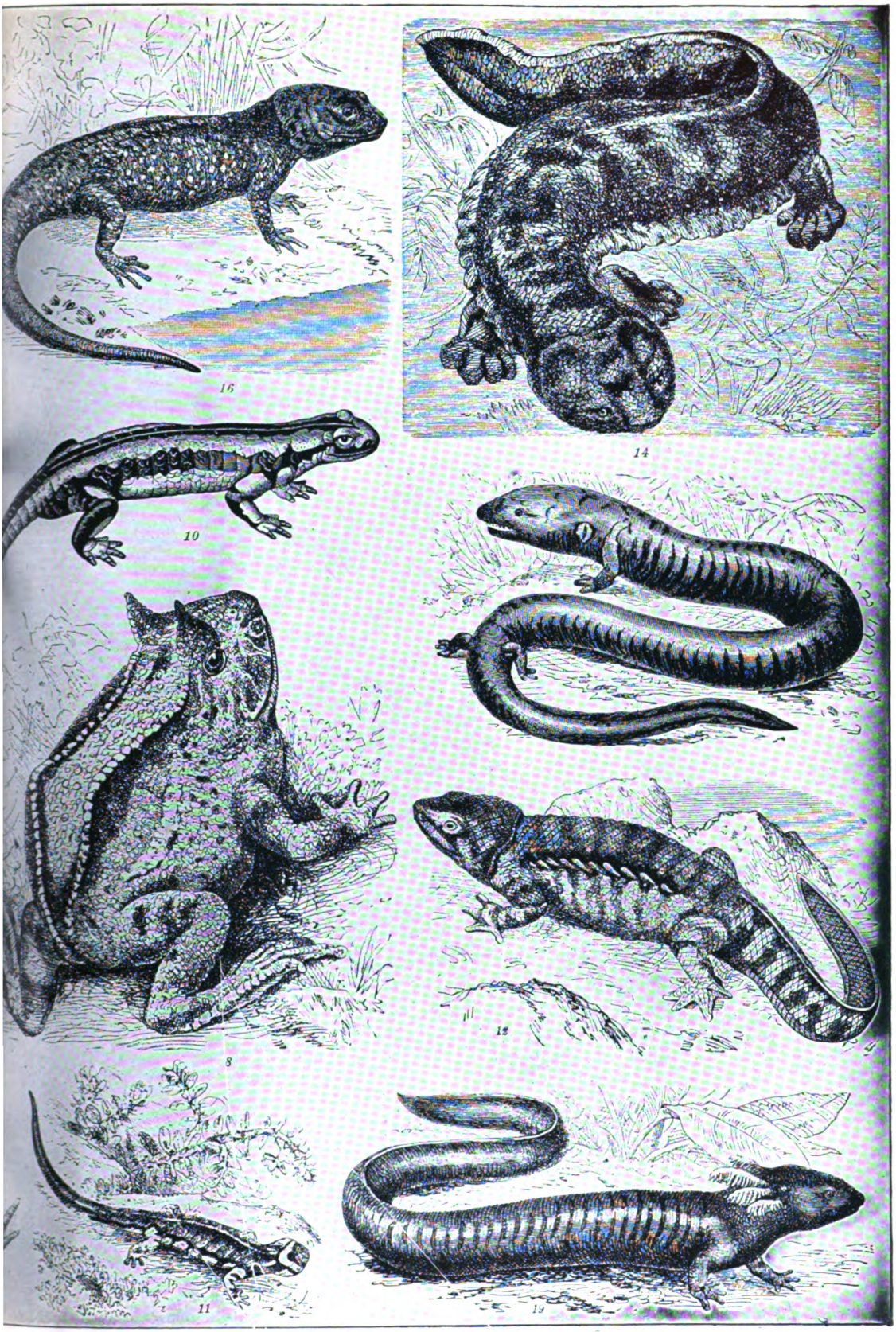
**BATRACHIA,** the frogs and toads of the *Anura* order of *Amphibia* (q.v.), comprising the *Ranidæ* frogs, the *Bufonidæ* ordinary toads, the *Hylidæ* tree frogs, the *Pipidæ* Surinam toads and similar reptiles with the distinguishing characteristic of development from the tailed and gilled tadpole state to a tailless, but leg- and lung-provided adult condition.

**BATT, John Herridge,** English Methodist divine: b. Taunton, Somerset, 23 June 1845. He was educated at Shebbear College, North Devon, and at Shireland Hall, Birmingham. He entered the ministry in 1864, was president of the Bible Christian Conference in 1887–88 and delegate to the Œcumenical Methodist Conference held at Washington, D. C., in 1891 and to that held in London in 1901. In 1900–07 he was Bible Christian editor and has served as secretary of the Bible Christian Examining Committee for 25 years. In 1910–11 he was chairman of the Bristol and South Wales district. He has published 'Dwight L. Moody: the Life Work of a Modern Evangelist'; 'Dr. Barnardo, the Foster-Father of Nobody's Children,' etc.

**BATTA,** Sumatra, a district in the northern part of the island, stretching between Sinkell and Tabuyong, on the west and the Bila and the Rakan on the east. Pop. about 300,000.

**BATTALION.** The unit of organization of troops consisting of several companies, usually four, and so called from being originally a body of men arranged for battle. A battalion of infantry is generally divided into an even number of companies and the companies are equalized by transferring men from the larger to the smaller. In each battalion there is a color-guard, composed of a color-sergeant and seven corporals, which is posted as the left four of the right-centre company. The color-sergeant carries the national color. The regimental color (when present) is carried by a sergeant, who takes the place of the corporal on the left of the color-sergeant. A battalion of cavalry is usually composed of four companies, but may be composed of a less number or a greater number, not exceeding seven. The interval between companies in line is eight yards. In whatever direction the battalion faces the companies are designated numerically from the right to the left in line and from the head to the rear when in column, *first company, second company,* and so on. In whatever direction the battalion faces the companies to the right of the centre of the battalion in line constitute the *right wing;* those to the left of the centre constitute the *left wing.* If there be an odd number of companies in line the centre company belongs to the right wing. A battalion of artillery consists of any number of batteries from two to five. The interval between batteries in line is 28 yards. In *horse-batteries* the interval is 36 yards. In whatever direction the battalion faces the batteries are designated numerically from the right to the left in line and from the head to the rear when in column, *first battery, second battery,* and so on. In whatever direction the battalion faces the batteries to the right of the centre of the battalion in line constitute the *right wing;* those to the left of the centre constitute the *left wing.* If there be an odd number of batteries the centre battery always belongs to the right wing. Battalion training, the means whereby the smallest number of independent units may be organized for manœuvre and for combat, should be intensive and directed primarily at the instruction of the company officers in the handling of units and

Fig. 1 Ringed Siphonops 2 Tree Frog 3 Common Frog 4 Skeleton of Frog 5 Egg-carrying Frog 6 Fire-bel
12 Waltel's Salamander 13 Newt 14 Giant Salamander 15 Axolotl — lar



Frog. 7 Toad. 8 Horned Frog 9 Pipa or Surinam Toad 10 Spotted Salamander 11 Spectacled Salamander
16 Axolotl — perfect animal 17 Amphiuma 18 Proteus 19 Siren

sub-units in their mutual relationship and should be mainly concerned with the tactical employment of the fighting power of companies in mutual support. The battalion commander should apply in practice the principles of command and tactical leadership, a knowledge of which he has gained by study and experience, and should at times direct, but not command, his battalion in exercises designed to involve specific features of the minor phases of training, the elements of which have previously been subjects of drill-ground training. A concrete case should be stated calling for the actual employment of the troops concerned. The strength and character of the opposition to be expected will be controlled by the battalion commander. Besides the application of appropriate tactical principles adapted to the ground in use, opportunity should be afforded of making incidental and appropriate use of previously acquired knowledge of signaling, of constructing field fortifications or pioneer work, of the passage of obstacles, of screening from the observation of air craft, etc. The greater the variety of incidents introduced the more instructive will these exercises be.

As the result of trench warfare and intensive training, the tactics of a battalion in defense have changed as drastically as in attack. If the enemy now assaults a position he must first pass through the curtain of fire of artillery. If the range becomes shorter he meets rifle fire and the machine guns, each firing 500 shots a minute. Then at 150 yards from the trench he is met by a second barrage of fire of bombs from the rifle grenades. If there be any survivors they are met at 40 yards by bombs thrown by hand, by close rifle fire and machine guns that spray bullets. If any reach their objective they face bayonets. The whole attack is under a dense white smoke of hundreds of exploding bombs. Each man has his specified work and his particular weapon, in the use of which he has been found to display a special aptitude. Each man has a responsibility which never fell to the share of the individual infantryman in the old-fashioned attack. See ARMY ORGANIZATION; TACTICS, MILITARY; TELEGRAPH BATTALIONS.

**BATTENBERG,** bät'ĕn-bärg, **Alexander,** PRINCE, Bulgarian ruler: b. 1857; d. 23 Oct. 1893. He was the second son of the morganatic union between Prince Alexander of Hesse and the Countess von Hauke, who in 1851 received the title of Countess of Battenberg. In 1879 he was chosen Prince of Bulgaria and in 1885, without consulting Russia, proclaimed the union of eastern Rumelia with Bulgaria. This action exasperated both Russia and Serbia and the latter took up arms against Bulgaria but was easily defeated by Alexander in the space of two weeks. In August 1886, however, Russian partisans overpowered Alexander in his palace at Sofia, forced him to abdicate and carried him off to Reni, in Russian territory. Set free in a few days, he returned; but after a futile attempt to conciliate the Tsar, he abdicated in September, married an actress, and assuming the title of Count Hartenau, retired to Gratz. See BULGARIA.

**BATTENBERG, Henry Maurice,** PRINCE, brother of the preceding; British soldier: b. Milan, 5 Oct. 1858; d. 20 Jan. 1896. He was the third son of Prince Alexander of Hesse (see BATTENBERG, ALEXANDER, above), and in 1885 married the Princess Beatrice of England, youngest daughter of Queen Victoria. He joined the British expedition of 1895 against Ashanti and while on his way home died at sea of a fever contracted during his military service. His youngest son, Prince Maurice, died of wounds received in action 27 Oct. 1914. His daughter, Princess Victoria, married King Alfonso XIII of Spain in 1906. The eldest son, Prince Alexander of Battenberg, changed his name and title by royal consent (June 1917) to Marquis of Carisbrooke.

**BATTENBERG, Louis Alexander,** PRINCE, British admiral: b. Gratz, Austria, 24 May 1854. He was the eldest son of Prince Alexander of Hesse (see BATTENBERG, ALEXANDER, above), and in 1884 married the eldest daughter of the Princess Alice Maud Mary, Grand Duchess of Hesse-Darmstadt, and second daughter of Queen Victoria. A naturalized British subject, he entered the navy in 1868, in which his rise was rapid. He was director of naval intelligence, 1902–04, and after holding important commands, was appointed First Sea Lord of the Admiralty in 1912, which post he held at the outbreak of the great European War. Following a campaign in the British press against alien enemies resident in Great Britain, he resigned his office on 30 Oct. 1914, on the ground that his birth and parentage somewhat impaired his usefulness. In accepting his resignation, the First Civil Lord of the Admiralty, Mr. Winston Churchill, paid a high tribute to his services, and especially referred to the provision he had made for the immediate concentration of the Grand Fleet at the opening of the war. In June 1917 his title was changed to Marquis of Milford Haven.

**BATTENBERG,** Prussia, village in the province of Hessè-Nassau, from which the sons of Prince Alexander of Hesse (see BATTENBERG, ALEXANDER) derive their title of princes of Battenberg. Before 1866 it belonged to Hesse-Cassel. Pop. about 1,000.

**BATTERING RAM** (Lat. *aries*), the earliest, simplest, and, until the improved usage of artillery, the most effective machine for destroying stone walls and the ordinary defenses of fortified towns. Its primitive form was a huge beam of seasoned and tough wood, hoisted on the shoulders of men, who, running with it at speed, against the obstacle, wall, gate or palisade, made what impression they might against it. The ancients employed two different machines of this kind — the one suspended, and vibrating after the manner of a pendulum, and the other movable on rollers. The swinging ram resembled in magnitude and form the mast of a large vessel, suspended horizontally at its centre of gravity, by chains or cords, from a movable frame. Ligatures of waxed cord surrounded the beam at short intervals, and cords at the extremity, opposite to the head, served for the purpose of applying human force to give the oscillatory motion. The rolling ram was much the same as the above in its general construction, except that instead of a pendulous motion, it received only a motion of simple alternation, produced by the strength of men

applied to cords passing over pulleys. This construction seems to have been first employed at the siege of Byzantium. These machines were often extremely ponderous. Appian declares that, at the siege of Carthage, he saw two rams so colossal that 100 men were employed in working each. Vitruvius affirms that the beam was often from 100 to 120 feet in length; and Justus Lipsius describes some as 180 feet long, and two feet four inches in diameter, with an iron head weighing at least a ton and a half. In contrasting the effects of the battering ram with those of the modern artillery, we must not judge of them merely by the measure of their respective momenta. Such a ram as one of those described by Lipsius would weigh more than 45,000 pounds, and its momentum, supposing its velocity be about two yards per second, would be nearly quadruple the momentum of a 40-pound ball moving with a velocity of 1,600 feet per second. But the operation of the two upon a wall would be very different. The ball would probably penetrate the opposing substance, and pursue its way for some distance; but the efficacy of the ram would depend almostly entirely upon duly apportioning its intervals of oscillation. At first it would produce no obvious effect upon the wall; but the judicious repetition of its blows would, in a short time, give motion to the wall itself. There would first be a barely perceptible tremor, then more extensive vibrations; these being evident, the assailants would adjust the oscillations of the ram to that of the wall, till at length a large portion of it, partaking of the vibratory impulse, would, by a well-timed blow, fall to the earth at once. This recorded effect of the ram has nothing analogous in the results of modern artillery.

**BATTERSEA**, a metropolitan borough of London, in Surrey, forming, with Clapham, a parliamentary borough, on the right bank of the Thames, opposite Chelsea, across which there is communication by several bridges. Area, 2,160 acres. There is a fine public park in Battersea, extending over 185 acres, and containing a subtropical garden of four acres, artificial lakes and other attractions. Clapham and Wandsworth commons are fine areas of unenclosed ground. Battersea and Clapham send two members to Parliament — one for each division. The municipality is most progressive, many of the public utilities, including electricity, being publicly owned. Pop. 167,743. Consult Browning and Kirk, 'Early History of Battersea,' which is reprinted from the collections of the Surrey Archæological Society (1891); Green and Damer, 'Clapham Junction and Its People' (1889); Hammond, 'Bygone Battersea' (1897); Simmonds, 'All About Battersea' (1882).

**BATTERSON, James Goodwin:** b. Bloomfield, Conn., 23 Feb. 1823; d. Hartford, Conn., 18 Sept. 1901. He was educated in the public schools of Litchfield, Conn., and in 1845 became an importer of and dealer in granite and marble, with headquarters in Hartford. His business grew into one of the most extensive of its kind in the United States, controlling large granite quarries in Westerly, R. I. He took important contracts for public and private buildings and supplied the stone for the State capitol and Connecticut Mutual buildings in Hartford, the Mutual Life, Equitable Life Insurance companies' buildings and Vanderbilt residence in New York. He was the first to use machinery for polishing granite and devised many other improvements. In 1863 he founded the Travelers' Insurance Company, and was its president until his death. Throughout his life, though never holding political office, he was one of the foremost public figures of his city and State. He was an enthusiastic student of political economy, and wrote numerous articles and pamphlets on the money question. He taught himself Greek and became an acknowledged master of it; and he was equally accomplished in several of the modern European languages, his versatility and capacity for work being extraordinary. In the last year of his life he wrote a poem of some length, 'The Beginnings,' dealing with the origin of the universe and life.

**BATTERY, The**, a park of 21 acres forming the southernmost point of New York, occupying the site of the original Dutch fortifications. In the early days of the city the vicinity of the Battery was a very aristocratic quarter, and some of the old houses are still standing. The park now contains the Barge Office and the Aquarium, formerly Castle Garden (q.v.).

**BATTERY.** See ELECTRIC BATTERY.

**BATTEUX**, bą-tė, **Charles**, French scholar, honorary canon of Rheims. b. Alland'huy, 1713; d. 14 July 1780. He displayed his gratitude to this city, in which he received his education, by the ode 'In Civitatem Remensem,' which was much admired. In 1739 he was invited to Paris, where he taught rhetoric in the colleges of Lisieux and Navarre. He was afterward appointed professor of Latin and Greek philosophy at the Royal College. In 1754 he became a member of the Academy of Inscriptions, and in 1761 of the French Academy. Batteux left a large number of valuable works. He did much service to literature and the fine arts, by introducing unity and system into the numerous canons of taste, which had gained a standing among the French by the example of many eminent men, particularly in regard to poetry, and must be regarded as a valuable writer on æsthetics, notwithstanding the higher point of view from which this science is now considered. Some of his most valuable works are 'Les Beaux-Arts réduits à un même principe' (1747) and 'Cours de Belles-Lettres ou principes de la littérature' (1774). These works were translated into several other languages.

**BATTHYANYI**, bŏt'yä-nye, **Kasimir**, COUNT, Hungarian statesman, Minister of Foreign Affairs during the Hungarian revolution: b. 4 June 1807; d. Paris, 13 July 1854. From his earliest childhood he took a lively interest in public affairs, and after having, as member of the Hungarian Diet, opposed the Austrian government, he became at the outbreak of the revolution one of the prominent champions of Hungarian independence, devoting his wealth and influence to the promotion of this cause, and at the same time distinguishing himself on various occasions by his courage and skill on the battlefield. After having officiated as governor of various provinces, he became Minister

of Foreign Affairs, under the administration of Kossuth, and subsequently he shared his exile in Turkey until 1851, when he repaired to Paris, where he died. Although sympathizing with Kossuth in some respects, he differed from him in others, and addressed, in 1851, a series of letters to the London *Times*, in which he reflected rather severely upon Kossuth's character as statesman and patriot.

**BATTHYANYI, Louis,** COUNT, Hungarian patriot: b. Pressburg 1809; d. 6 Oct. 1849. He entered the army as a cadet at the age of 16, and on coming into possession of a large fortune, abandoned a military for a political career, and in process of time attained the rank of leader of the opposition in the Hungarian Diet. Upon the breaking out of the commotions of 1848, Batthyanyi took an active part in promoting the national cause, and with a company of armed vassals came forward to assist it in the field. On the entry of Windischgrätz into Budapest in January 1849, he was arrested in the house of his sister-in-law, the Countess Karolyi. After being conveyed to various places he was finally brought back to Budapest, tried by court-martial and condemned to be hanged. The execution of this sentence he prevented by inflicting several wounds with a poniard on his neck, and he was accordingly shot.

**BATTIADÆ,** a dynasty of Cyrene which reigned from the 7th to the 5th century B.C. The kings of this dynasty were Battus I, the founder of Cyrene; Arcesilaus I, his son; Battus II, son of Arcesilaus, who greatly increased the power of Cyrene; Arcesilaus II, son of Battus II; Battus III, son of Arcesilaus II; Arcesilaus III, son of Battus III, who submitted to the Persian King; Battus IV, son of Arcesilaus III; Arcesilaus IV, son of Battus IV, the last king of Cyrene, killed in a revolution. He is celebrated in the fourth and fifth Pindaric odes.

**BATTIK,** an Oriental production of the natives of the Dutch East Indies, who decorate their clothing with it; also made in The Hague for local use and export. Upon a piece of linen various designs are outlined with a pencil. When the design is completed, the ornamented parts of the fabric are covered with a liquid which possesses the quality of stiffening after being applied. The parts not ornamented are dyed the desired color. After the entire fabric has been ornamented in this manner, it is boiled in hot water so as to take the hard stuff out of the battik. The dyed parts will then hold the dye and the battik is ready. The Hague people were the first to introduce battik into Europe. It is made on linen, silk, velvet and leather, and is exported to all the principal cities of Europe.

**BATTISTI, Cesare,** Italian author and patriot: b. Trent, 4 Feb. 1875; d. 13 July 1916. After studying law at Vienna and Gratz, he devoted himself to geographical science at Florence, where he received the Litt.D. degree in 1897. His topographical, geological and literary researches concerned always the Trentino, that part of «Italia irredenta» under Austrian rule. His numerous works on these subjects are regarded as standard authorities. An ardent democrat, he fiercely defended the Italian national cause in the Trentino. He had fought in the ranks of the Liberals until Socialism made its appearance in that part, when he embraced the new creed and became its leading exponent. As editor of the Socialist daily paper *Il Popolo*, and as Socialist deputy for Trent in the Austrian Parliament, he conducted the political campaign in favor of autonomy for the Trentino and the establishment of an Italian university in Austria. On various occasions his activities brought him into conflict with the Austrian authorities and also several terms of imprisonment. On the outbreak of the European War Battisti returned to Italy and advocated Italian intervention against Austria. This desire being fulfilled in May 1915, he entered the Italian army as a private soldier and in due course rose to the rank of captain. During an attack on the Pasubio sector in the Vallarsa on 10 July 1916, in which Battisti commanded a company of the Vicenza Battalion, he was severely wounded and left on the battlefield, where he was found by the Austrians. On 13 July the Italian papers announced that he had been killed in battle; the following day a report from Innsbrück stated that he was a prisoner in the hands of the Austrians and would be tried by court-martial for high treason. Two days later it was announced that he had been sentenced to death and executed on 13 July. A different complexion was given to the story by Signor Arca, an Italian deputy, returned from the front on 17 July. He stated that Battisti, being unable to regain the Italian lines after receiving his wounds, had committed suicide rather than fall into the hands of his enemies. It was then assumed that the Austrians had held a mock trial on the body and afterward hanged it. Public indignation rose high in Italy; on 20 July a procession marched to the Capitol in Rome and adopted a resolution denouncing the execution of Battisti and demanding declaration of war against Germany. A week later an English newspaper correspondent affirmed that Battisti had been sent to Trent and tried and hanged within 40 hours, «though in a dying condition.» A year and five months later, on 16 Dec. 1917, the New York *Times* published a reproduction of a photograph depicting Battisti walking unaided to his execution under military escort. Among his best known works are 'Il Trentino, saggio di geografia, fisica e d'antropogeografia'; 'Termini geografici raccolti nel Trentino.'

**BATTLE, Kemp Plummer,** American educator: b. Franklin County, N. C., 19 Dec. 1831. He was graduated at the University of North Carolina, 1849; received the degrees A.B., A.M., LL.D. from Davidson College and from the University of North Carolina. He was a member of the Secession Convention, 1861; State treasurer of North Carolina, 1866–68; president of the University of North Carolina, 1876–91; resigned to become professor of history, 1891–1907; is at present emeritus professor of history, University of North Carolina. He has published 'History of the University of North Carolina'; 'History of the Supreme Court of North Carolina'; 'Trials and Judicial Proceedings of the New Testament'; 'Old Schools and Teachers of North Carolina'; and many historical pamphlets.

**BATTLE.** An encounter between two armies, resulting from an attempt of one of

the armies to attain an object while the other opposes the attempt. This encounter is usually a general action in which all of the divisions of the armies are or may be engaged. Battles are classified as *defensive, offensive* and *mixed.* In a purely defensive battle the army selects a position in which to await the enemy and there to give battle with no other end in view than to hold this position and repulse the enemy. In a purely offensive battle an army seeks the enemy and attacks him wherever he is to be found. A mixed battle is a combination of these two. All other things being equal, an offensive battle offers the greatest advantages, as it permits a general to choose his point of attack and gives him time to make all the preparations that he may deem necessary. Notwithstanding the practical application of science in warfare, the inventions of airplanes, wireless telegraphy, etc., battles, though planned and fought almost solely on tactical principles, have in many cases important strategical bearings which it is the province of an able general to see and to take advantage of. Skilfully combined strategical marches, when ably executed, may alone decide the fate of a campaign, without the necessity of coming into collision with the enemy; but this is a rare case, and a battle is usually the necessary sequence to an important strategical movement, and, if well planned and successfully fought, may prove decisive of the war. Military writers designate by *orders of battle* the general combinations made to attack one or more points of an enemy's position; while they apply the term *line of battle* to the disposition of the troops, in their relations to each other for mutual co-operation, acting either offensively or defensively. Whatever may be the disposition of the troops, the line of battle of any considerable force will present a well-defined centre and two wings; thus offering to an assailant one or more of these as his point of attack. This has led to dividing orders of battle into several classes, arising from the necessary disposition of the assailing force, as it moves to attack one or more of these points. If an equal effort is made to assail every point of the enemy's line, the assailing force must necessarily advance on a line parallel to the one assailed, and this therefore has received the name of the *parallel order of battle.* If the line of the assailing force is sensibly perpendicular to that of the assailed, the disposition is said to be the *perpendicular order.* If the main attack is made by one wing, the centre and other wing being held back, or *refused* as it is termed, the positions of the lines of the two parties become naturally oblique to each other, and this is termed the *oblique order.* In like manner the *concave order* results from an attack by both wings, the centre being refused, and the *convex order* from refusing the wings and attacking by the centre, etc. The order of battle should result from the position in which the enemy's forces are presented for attack; and as these, if skilfully disposed, will be posted so as to take advantage of the points of vantage which the position they occupy offers, the order of battle for assailing may vary in an infinity of ways. Still it is not to be inferred that one order is not superior to another, or that the choice between them is one at pleasure. In the parallel order, for example, the opposing forces being supposed equal in all points, there is no reason why one point of the enemy's line should be forced rather than another, and, therefore, success depends either upon destroying his whole line, or simply pushing it back; as chance alone will determine a break in any part of his line. In the oblique order, on the contrary, one wing being refused, or merely acting as a menace, the other may be strongly re-enforced, so as to overwhelm the wing opposed to it, and, if this succeeds, the assailing army, by its simple onward movement, is gradually brought to gain ground on the enemy's rear, and to threaten his line of retreat. Again, in crossing a river on a bridge, or passing through any other defile to assail an enemy opposing this movement, the order of battle becomes necessarily convex, the extremity of the defile itself becoming the centre from which the assailing forces radiate, to enlarge their front, while they are obliged to secure the defile on each flank. To lay down rules therefore as to what order of battle should, in every case, be employed would be pure pedantry. Talent, skill and experience can alone enable a general to decide this point in any given case. As to the distribution of the troops belonging to the separate fractions of the entire force, as an army corps, a division, etc., the rule is to so distribute them that they shall fight under the immediate eye of their respective commanders and support each other. While engineering science is now applied to the emergencies of modern warfare in order to facilitate locomotion and communication, and while the modern battle is largely decided by a superiority of motor transports, transporting men from one part of the battlefield to another, with airmen to guide operations, it must be remembered that even in the highly scientific battle of to-day, with vast and newly-invented war machinery at hand, the infantry is the principal and most important arm, which is charged with the main work on the field of battle and decides the final issue of combat. The rôle of the infantry, whether offensive or defensive, is the rôle of the entire force, and the utilization of that arm gives the entire battle its character. The success of the infantry is essential to the success of the combined arms. If the hostile lines are held by good infantry, properly led and supported by proper artillery, fire action alone will not bring about a decision. For this purpose the assault will be necessary. See ADVANCE GUARD; ATTACK; OUTPOST; PATROLS; RECONNAISSANCE; STRATEGY; and TACTICS.

**BATTLE**, England, market-town in Sussex, situated in a valley seven miles northwest of Hastings. The church is ancient, and contains some fine specimens of painted glass and numerous antique monuments. Battle was long celebrated for the manufacture of gunpowder. The early name of this place was Senlac, and it received its present name from the battle of Hastings which was fought here. In memory of the battle William the Conqueror erected the famous Battle Abbey on the spot where Harold fell. This building, the ruins of which have a circumference of about a mile, has almost entirely disappeared, but interesting remains of a subsequent building exist, including the gateway, a beautiful specimen of the decorated English style. One portion of this building

forms a mansion, the residence until her death of the Duchess of Cleveland. Consult Walcott, 'History of Battle Abbey' (1867); Duchess of Cleveland, 'The Roll of Battle Abbey' (1889). Pop. 2,996.

**BATTLE, Law of,** the contest between male animals for possession of the females, among barbarous nations. Among certain tribes of the North American Indians the men wrestled for any women to whom they were attached. With the Australians the women were the constant cause of war, both between the individuals of the same tribe and between distinct tribes. In mammals the male, says Darwin, appears to win the female much more through the law of battle than through the display of his charms. The most timid animals, even the hare, will fight desperately, the duel only ending by the death of one of the parties. Male moles, squirrels and beavers have been seen fighting for their mate.

**BATTLE, Trial by, or Wager of,** an obsolete method of deciding cases, whether civil or criminal, by personal combat between the parties or their champions in presence of the court. A woman, a priest, a peer or a person physically incapable of fighting could refuse such a trial. This mode of trial ended in Scotland with the close of the 16th century. Consult Stephen, 'History of the Criminal Law of England' (1883); Neilson, 'Trial by Combat' (1890).

**BATTLE ABOVE THE CLOUDS, The,** the name given to that portion of the battle of Chattanooga fought on Lookout Mountain, Tenn., 24 Nov. 1863. See CHATTANOOGA, BATTLE OF.

**BATTLE AXE,** a military weapon much used in the early part of the Middle Ages, particularly by those who fought on foot. It was not uncommon, however, among the knights, who used also the mace, a species of iron club or hammer. Both are to be seen in the different collections of old arms in Europe. The Greeks and Romans did not employ the battle axe, though it was found among contemporary nations. In fact the axe is one of the earliest weapons, its use as an instrument of domestic industry naturally suggesting its application for purposes of offense; but, at the same time, it has always been abandoned as soon as the art of fencing, attacking and guarding was cultivated; because the heavier the blow given with this instrument, the more will it expose the fighter. It never would have remained so long in use in the Middle Ages but for the iron armor which protected the body from every thing except heavy blows. In England, Ireland and Scotland the battle axe was much employed. At the battle of Bannockburn, King Robert Bruce clave an English champion down to the chin with one blow of his axe. The Lochaber-axe remained a formidable weapon in the hands of the Highlanders to a recent period and was used by the old city guard of Edinburgh A pole axe is a long-handled battle axe.

**BATTLE OF THE BLOODY ANGLE.** See SPOTTSYLVANIA COURT HOUSE, BATTLES OF.

**BATTLE OF THE BOOKS, The,** a famous work by Jonathan Swift, written in 1697, but remaining in manuscript until 1704. It was a travesty on the endless controversy over the relative merits of the ancients and moderns, first raised in France by Perrault. Its immediate cause, however, was the position of Swift's patron, Sir William Temple, as to the genuineness of the 'Letters of Phalaris.' The work was not taken with entire seriousness by Swift's contemporaries.

**BATTLE CREEK,** Mich., city of Calhoun County, midway between Detroit and Chicago, located at the junction of the Battle Creek and Kalamazoo rivers and on the main trunk lines of both the Michigan Central and Grand Trunk railways, 48 miles south of Grand Rapids. Battle Creek is in the centre of the best farming district of the State, having within a radius of 15 miles over 425,000 acres of improved land with $25,000,000 invested in farm properties. Battle Creek is known as a manufacturing centre and has a national reputation for its cereal foods. There are 176 manufacturing plants employing 6,200 people. Battle Creek manufactures threshing machines, traction engines and steam pumps and also printing presses, bread-wrapping machines, gas stoves, fibre boxes, box board paper, wall registers, steel paper balers, air compressors, brass and aluminum goods, automatic sealing machines, bakers' ovens, hose clamps, high-power drills, electric bath cabinets, candies and cigars. There are several large foundries and one big enameling plant. The weekly pay-roll is $169,000. The engine and repair shops of the Grand Trunk Railroad are also located in this city and this is a divisional centre of that railroad. Battle Creek has a large sanatorium, with thousands of visitors yearly and nearly 1,000 employees. It is the 9th city in size in the State of Michigan, but the first city in per capita bank deposits, with $13,718,171.22 and the first city in the State in the value of net factory output per capita of population. The city is also a leader in the per capita of savings deposits, there being $484 for every man, woman and child in the city. It is the 4th city in the State in the annual value of manufactured products, having $23,248,000 in 1914. The city is known as a home-owning city, as 72 per cent of the people own their own homes and 98 per cent are American-born. It has over 50 fraternal societies, a woman's club, a charitable union, a women's league, an associated charities, a Y. W. C. A., a Y. M. C. A., the Athelstan Club, a social organization composed of 400 business and professional men, and a Chamber of Commerce. There is a public library costing $70,000, a Y. M. C. A. building costing $40,000, both the gifts of the late Charles Willard; a fine city hospital, the gift of John Nichols; to this has been added a fine addition, the gift of the Rogers family. There are 12 schools with 140 teachers, and a $350,000 central high school, the city having invested $1,000,000 in schools without bonding. There is also a Catholic school, Adventist school and two business colleges. There are three daily papers and a number of monthly publications. Battle Creek, so named from a pioneer fight with Indians, was first settled in 1832 by families from New York and New England. It was incorporated as a village in 1850 and as a city in 1859. Since 1913 it is under a commission form of government.

The city owns a $100,000 dual water system, has a paid fire and police department, electric lights and gas plant and two telephone systems. It has an assessed valuation of $37,890,780, 110 miles of streets, 16 miles of paving, 44 miles of sewer, 8½ miles of street railway. There are nine parks of 102 acres. Adjoining the city is Lake Goguac, surrounded by beautiful homes and estates. There are 16 lakes in the immediate vicinity that abound with fish, and State highways reach all parts of the county from the city. Battle Creek stands 3d among the cities of the State in the amount of post-office business. Pop. 25,267.

**BATTLE CREEK SANITARIUM, The,** is a philanthropic and humanitarian institution operating under a perpetual charter which compels the use of all the profits gained to foster the spread of humanitarian work. More than 60 branches of the parent institution have been established in or near large cities in different parts of the world, under the title of The American Medical Missionary Association, and each of these branches conducts a life-saving business on Good Samaritan principles. The organization began its work in the year 1866, with almost no capital and only one patient, in a small two-story frame house, in the then small village of Battle Creek, Mich. The incorporators believed that Christianity should be expressed in works as much as in faith, in curing the sick and healing the wounded, and thus preparing the unfortunate for the reception of moral and spiritual inspiration.

The Golden Rule is the foundation principle of the institution. It has grown from a small beginning to the immense proportions of the present time, with one of its buildings nearly 1,000 feet in length and six stories in height and numerous other buildings radiating from the main one and scattered about it in a finely wooded park. Fire destroyed the old building and all its contents, but it was soon rebuilt larger and better than before, and has grown to its present proportions.

**BATTLE CRY OF FREEDOM, The,** a patriotic song of the American Civil War by the well-known composer, George Frederick Root (1861).

**BATTLE OF DORKING, The,** a realistic, matter-of-fact description of an imaginary invasion of England by a foreign power, by Gen. (then Lieut.-Col.) Sir George Chesney. It appeared anonymously first in *Blackwood's Magazine* in 1871 and has since been reprinted under the title 'The Fall of England.' After the ignominious defeat of the French at Sedan, Chesney foresaw a similar fate for his own country unless it should reorganize its army. In the story fleet and army are scattered when war is declared, but the government has a sublime confidence that British luck and pluck will save the country now as hitherto. To universal surprise and consternation, the hostile fleet annihilates the available British squadron and the enemy lands on the south coast. Volunteers are called out and respond readily; but ammunition is lacking, the commissariat is unorganized and the men, though brave, have neither discipline nor endurance. The decisive battle is fought at Dorking, the British are routed and England, without other alternative, is compelled to submit to the humiliating terms of the conqueror.

**BATTLE OF THE FROGS AND MICE, The,** an ancient Greek mock epic, written in hexameters. Formerly attributed to Homer. Modern critics are of the opinion that the credit of authorship should be given to Pigres (q.v.). Only 316 lines are now extant.

**BATTLE-GROUND,** Ind., a town in Tippecanoe County, where the famous battle of Tippecanoe was fought between the United States troops under General Harrison and the Indians under Tecumseh and his brother, "The Prophet," 7 Nov. 1811.

**BATTLE-HYMN OF THE REPUBLIC,** American song, by Julia Ward Howe, published in the *Atlantic Monthly* in 1862, and sung to the air "John Brown's Body."

Mine eyes have seen the glory of the coming of the Lord;
He is trampling out the vintage where the grapes of wrath are stored;
He hath loosed the fateful lightning of His terrible swift sword;
His truth is marching on

I have seen Him in the watch-fires of a hundred circling camps;
They have builded Him an altar in the evening dews and damps;
I can read His righteous sentence by the dim and flaring lamps;
His day is marching on.

I have read a fiery gospel, writ in burnished rows of steel:
"As ye deal with my contemners, so with you my grace shall deal;
Let the Hero, born of woman, crush the serpent with his heel,
Since God is marching on."

He has sounded forth the trumpet that shall never call retreat;
He is sifting out the hearts of men before His judgment seat;
Oh, be swift, my soul, to answer Him! be jubilant, my feet!
Our God is marching on.

In the beauty of the lilies Christ was born across the sea,
With a glory in his bosom that transfigures you and me;
As he died to make men holy, let us die to make men free,
While God is marching on.

**BATTLE OF THE KEGS, The.** See HOPKINSON, FRANCIS.

**BATTLE OF MALDON, The.** This fragment, consisting of 325 lines of Anglo-Saxon verse, celebrates an historical occurrence of the year 991. A Viking expedition of considerable size, including, among other leaders, the celebrated Olaf Tryggveson, descended upon the east coast of England, and, as the 'Anglo-Saxon Chronicle' informs us, plundered Ipswich. The Scandinavians then moved down the coast to Essex and landed near Maldon, at the mouth of the river Blackwater. Here they were met by the military forces of Essex under the ealdorman Byrhtnoth. After a spirited struggle, the English were defeated, and Byrhtnoth slain. The 'Chronicle' continues: "In this same year it was resolved that tribute should be given, for the first time, to the Danes, for the great terror they occasioned by the sea-coast." To this timid and disastrous policy the poem affords the sharpest contrast; it is full of the pride and defiance of the warrior, of the undying allegiance of the thane to his lord, and of the necessity for vigorous defense against the common foe. There is much probability that it was designed not only to record a heroic struggle against overwhelming odds, but also to call the English to a spirited resistance. The piece was probably composed not long after the battle.

Although some three centuries later than 'Beowulf,' it preserves the technique and the vigor of the older alliterative poetry. The manuscript is no longer extant, but the lines were copied by Hearne, and published at Oxford in 1726. There is a convenient translation into modern English verse by H. W. Lumsden, printed by Cook and Tinker in 'Translations from Old English Poetry,' but it should be observed that the verse-form does not reproduce that of the original.

WILLIAM WITHERLE LAWRENCE.

**BATTLE MONUMENT,** a monument in Baltimore, Md., erected in memory of those who fell in defense of the city when it was attacked by the English forces in September 1814.

**BATTLE OF THE SALIENT.** See SPOTTSYLVANIA COURT HOUSE, BATTLES OF.

**BATTLE OF THE SPURS,** (1) defeat of the French by the Flemings at Courtrai, 1302; (2) a battle of Guinegate, 16 Aug. 1513, in which the French cavalry were defeated by the forces of Henry VIII of England and the Emperor Maximilian. It was thus named on account of the numberless gilt spurs gathered by the victors.

**BATTLEDORE AND SHUTTLECOCK,** a popular game invented in the 14th century. The implements are a bat shaped like a tennis racket and strung with gut or covered with parchment, and a shuttlecock consisting of a cork stuck with feathers, which is batted to and fro between the players.

**BATTLEFORD,** Canada, a town of Saskatchewan province, on the river Battle near its junction with the North Saskatchewan, about 100 miles from Prince Albert. The Riel insurrection began near Battleford. It was the capital of the Northwest Territory, 1876–83. Pop. (1911) 1,335.

**BATTLEMENTS,** notched or indented parapets used in fortifications. The rising parts are called cops or merlons; the spaces by which they are separated crenels, embrasures and sometimes loops. The object of the device is to enable the soldier to shelter himself behind the merlon, whilst he shoots through the embrasure. The bas-reliefs of Nineveh and the Egyptian paintings testify to the antiquity of this form of structure. There is no nation by which it has not been adopted.

**BATTLESHIP.** See NAVAL ARCHITECTURE; WARSHIPS, MODERN.

**BATWA,** bät'wą, a tribe of pygmies living in the Wissmann Falls district of southern-central Africa. They are sometimes less than four feet high, but well shaped and well developed. They live in villages and are under the protection of the Bakuba. Their food consists of meat, wild roots and a few vegetables which they cultivate. Their weapons are knives, bows and arrows, poisoned with the juice of the root of a species of Euphorbia. Their household furniture is very simple, and they do not make pottery, weave or work in metals.

**BAUAN,** bow'an, or **BAUANG,** Philippines, a town of Luzon in the province of Batangas, four miles northeast of the town of Batangas. The town manufactures piña cloth embroidery and is a centre for the marketing of agricultural products. Pop. 39,094.

**BAUCHER,** bō-shā, **François,** French hippologist: b. Versailles 1796; d. Paris, 14 March 1873. He is remembered because of his method of training saddle horses and his book 'Methode d' Equitation basée sur des nouveaux principes' (1842).

**BAUCIS,** in mythology, a Phrygian woman, the wife of Philemon. They received Jupiter and Mercury hospitably, after these gods had been denied hospitality in the whole country while traveling in disguise. A deluge destroyed the remainder of the people, but Philemon and Baucis, with their cottage, were saved. They begged the gods to make their cottage a temple, in which they could officiate as priest and priestess, and that they might die together; which was granted. Philemon and Baucis are, therefore, names often used to indicate faithful and attached married people. See PHILEMON.

**BAUDELAIRE,** bōd-lār, **Charles Pierre,** French poet; b. Paris, 9 April 1821; d. 31 Aug. 1867. In early life he resided for some time in the East Indies, and on his return devoted himself to literature. He first gained some reputation by translations from the works of Edgar Allan Poe, four volumes of which appeared in 1856–65, regarded as masterpieces in their way. A production, however, that caused greater sensation was a collection of poems designated 'Les Fleurs du Mal' (1857), which had to be expurgated as the result of proceedings on the part of the police authorities. This work gave Baudelaire a high position as a writer of the romantic school, and evidenced at the same time his curious inclination for repulsive subjects. A work of higher tone was his 'Petits Poëmes en Prose'; others being 'Les Paradis Artificiels'; 'Opium et Haschich'; a monograph on Théophile Gautier; and 'R. Wagner et Tannhäuser à Paris.' Apart from his verse however Baudelaire's finest work is contained in his 'Little Poems in Prose.' All of these are exquisitely written, and in many of them the beauty of the thought is equal to the beauty of the language. He united a remarkably keen analytical faculty with a powerful, sombre imagination. Brooding melancholy, curiously tinctured with irony inspires the solemn music and dream-like imagery of his best verses. The writer whom in many respects he resembles most strongly is Edgar Allan Poe. Drink and drugs led to paralysis and an early death. Consult James, 'French Poets and Novelists' (1884); Asselineau, 'Charles Baudelaire sa vie et son œuvre' (1889); Symons, A., 'Poems in Prose' (London 1905).

**BAUDIN,** bō-dăń, **Nicolas,** French sea-captain and botanist: b. on the island of Ré 1750; d. 16 Sept. 1803. He entered the merchant navy at an early age, and in 1786 went on a botanical expedition to the Indies, sailing from Leghorn under the Austrian flag, with a vessel under his own command. His collections in this expedition, and in a second which he made to the West Indies, were presented by him, on his return to France, to the government, which promoted him to the rank of captain, and sent him, in 1800, on a scientific

mission to Australia. He failed to penetrate the interior of that country, but made many interesting observations on the coast. Half of his men died of fatigue and exposure, and he himself died at the Isle of France soon after his return. Péron, who accompanied him, wrote an account of the voyage.

**BAUDIN DES ARDENNES,** bō-dăn-dăz-ăr-dĕn, **Charles,** French vice-admiral: b. Sedan, 21 July 1784; d. Paris, 7 June 1854. In 1812 he conducted a small fleet safely into the harbor of Saint Tropez, though continually pursued by English cruisers. In 1816, he resigned and entered the merchant service, but after the July revolution (1830) re-entered the navy. In 1838, he was promoted to the rank of rear-admiral, and received the command of the expedition against Mexico. His efforts to effect an amicable settlement with the Mexican government proving fruitless, he bombarded, 27 Nov. 1838, the fortress of San Juan de Ulloa, which surrendered on the following day. Baudin treated the inhabitants with great consideration and permitted 1,000 Mexican soldiers to remain in the city to maintain order, but on the Mexican government sending re-enforcements, he was compelled to resort again to hostilities, which, on 5 December of the same year, resulted in the disarming of Vera Cruz, in the complete defeat of the Mexican army and in the restoration of peace between the two countries. On his return to France, he was for a short time Minister of Marine under Louis Philippe. In March 1848 he was appointed commander of the French fleet in the Mediterranean, and remained stationed for some time during the Italian outbreak off the Neapolitan and Sicilian coast. In the following year he retired from active service.

**BAUDISSIN,** bow'dĭs-sĭn, **Wolf Friedrich Karl, Count von,** German littérateur: b. Rantzau, 30 Jan. 1789; d. Dresden, 4 April 1878. After 1827 he resided at Dresden, where he collaborated with Tieck and Schlegel in a noted translation of Shakespeare. The translations contributed by Baudissin are those of 'Henry VIII'; 'Much Ado About Nothing'; 'Taming of the Shrew'; 'Comedy of Errors'; 'Measure for Measure'; 'All's Well that Ends Well'; 'Antony and Cleopatra'; 'Troilus and Cressida'; 'Merry Wives of Windsor'; 'Love's Labor's Lost'; 'Titus Andronicus'; 'Othello'; 'King Lear.' He published 'Ben Jonson und seine Schule' (1836); and translation from Molière (1865–67).

**BAUDISSIN, Wolf Wilhelm,** German theologian: b. Sophienhof, Holstein, 26 Sept. 1847. He was professor at Strassburg, 1876–81, at Marburg, 1881–1900, and at Berlin from 1900. His publications comprise 'Translations Antiquæ Arabicæ Libri Jobiquæ Supersunt' (1870); 'Studien zur semitischen Religionsgeschichte' (1870–78); 'Die Geschichte des Alttestamentlichen Priesterthums untersucht' (1889); 'August Dillmann' (1895); 'Einleitung in die Bücher des Alten Testamentes' (1901); 'Adonis und Esmun, eine Untersuchung zur Geschichte des Glaubens an Auferstehungsgötter und an Heilgötter' (1911).

**BAUDRILLART,** bō-drę-yär, **Henri Joseph Léon,** French political economist: b. Paris, 28 Nov. 1821; d. there, 24 Jan. 1892. He edited the *Constitutionnel* and subsequently the *Journal des Economistes,* and in 1881 was professor in the Ecole des Ponts et Chaussées. He published 'Des rapports de la Morale et de l'Economie Politique' (1860); 'Manuel d'Economie Politique' (1857); 'Publicistes Modernes' (1862); 'Histoire du Luxe' (1878–80); 'Les Populations Agricoles de la France' (1880–88).

**BAUDRY,** bō-drę, **Paul,** French painter: b. La Roche-sur-Yon, 7 Nov. 1828; d. 17 Jan. 1886. He studied in Paris and Rome. Among his best known works are 'Punishment of a Vestal Virgin' (1857), and the 'Assassination of Marat' (1867). He was for 10 years employed in decorating the foyer of the Grand Opéra in Paris. His famous 'Glorification of the Law' on the ceiling of the Palace of Justice gained him the medal of honor in 1881 and is generally ranked as his masterpiece. He was elected a member of the Académie des Beaux-Arts in 1870.

**BAUER,** bow'ĕr, **Bruno,** German philosopher, historian and Biblical critic of the rational school: b. Eisenberg, 6 Sept. 1809; d. Berlin, 15 April 1882. Among his works are 'Critique of the Gospel of John' (1840); 'Critique of the Synoptic Gospels' (1840); 'History of the French Revolution to the Founding of the Republic' (1847); 'History of Germany during the French Revolution and the Rule of Napoleon' (1846); 'Critique of the Gospels' (1850–51); 'Critique of the Pauline Epistles' (1850); 'Philo, Strauss, Renan and Primitive Christianity' (1874); 'Christus und die Cäsaren,' in which the foundation of Christianity is attributed to Seneca (1877). His work displays equal learning and industry but his conclusions are far from harmonizing with evangelical thought.

**BAUER, Caroline,** German actress: b. Heidelberg, 29 March 1807; d. Zürich, 18 Oct. 1878. She made her début in 1822, and had achieved a brilliant success, in comedy and tragedy alike, when in 1829 she married Prince Leopold, afterward King of the Belgians. Their morganatic union was as brief as it was unhappy; in 1831 she returned to the stage, which she quitted only in 1844, on her marriage to a Polish count. An English translation of her 'Posthumous Memoirs' appeared in 1884.

**BAUER, Edgar,** German publicist, brother of Bruno Bauer: b. Charlottenburg, 7 Oct. 1820; d. Hanover, 18 Aug. 1886. He published various works of an historical and polemical nature, strongly tinctured with radicalism, and spent five years in prison on account of his 'Streit der Kritik mit Kirche und Staat.' Other books by him are 'Die Rechte des Herzogtums Holstein' (1863); 'Die Deutschen und ihre Nachbarn' (1870).

**BAUER, Louis A.,** American magnetician: b. Cincinnati, Ohio, 28 Jan. 1865. He was astronomical and magnetic computer for the United States Coast and Geodetic Survey, 1887–92; docent in mathematical physics in the University of Chicago, 1895–96; chief of division of terrestrial magnetism of Maryland Geological Survey, 1896–99. He was assistant

professor of mathematics in the University of Cincinnati, 1897–99; chief of division of terrestrial magnetism and inspector of magnetic work, United States Coast and Geodetic Survey, 1899–1906; director of the department of terrestrial magnetism, Carnegie Institution of Washington, since 1904; lecturer in terrestrial magnetism, Johns Hopkins University, since 1899. He is an honorary member of the Sociedad Cientifica Antonio Alzate of Mexico, and of the Royal Cornwall Polytechnic Society of England, and a member of the permanent committee on terrestrial magnetism and atmospheric electricity of the International Meteorological Conference; also a member of the American Philosophical Society, American Academy of Arts and Sciences and a corresponding member of the Göttingen Royal Academy of Sciences and of the Portugal Academy of Sciences. He was awarded the Lagrange prize for his work in terrestrial magnetism by the Belgium Academy of Arts and Sciences in 1910, and the Neumayer gold medal at Berlin in 1913; author of various publications bearing chiefly on terrestrial magnetism and cosmical physics. He edits and publishes *Terrestrial Magnetism.*

**BAUER, Wilhelm,** German inventor: b. Dillingen 1822; d. Munich, 18 June 1875. He served as an artilleryman during the Schleswig-Holstein War (1848), and, meanwhile, conceived the plan of a submarine vessel for coast defense. From 1851 to 1855 he vainly sought means from Austria, France and England to complete his experiment, but Russia finally adopted his scheme. He afterward made improvements in torpedoes and in submarine guns.

**BÄUERLE,** boi'ĕr-lĕ, **Adolf,** Austrian dramatist and novelist: b. Vienna, 9 April 1786; d. Basel, 20 Sept. 1859. He cultivated with much success the field of popular comedy and local farce in Vienna, where, in 1804, he founded the Vienna *Theatre-Gazette,* until 1847 the most-widely-read paper in the Austrian monarchy, and now a valuable source for the history of the stage in Vienna. Of his numerous plays the following became known also outside of Austria: 'Leopold's Day' (1814); 'The Enchanted Prince' (1818); 'The Counterfeit Prima Donna' (1818); 'A Deuce of a Fellow' (1820); 'The Friend in Need.' Under the pseudonym Otto Horn he wrote the novels 'Therese Krones' (1855) and 'Ferdinand Raimund' (1855), full of the personal element and local anecdote.

**BAUERNFEIND,** bow'ĕrn-fint, **Karl Maximilian von,** German engineer and geodesist: b. Arzberg, 18 Nov. 1818; d. 1894. He was professor of geodesy and engineering in the engineering school at Munich, and long a director of the Technical School there organized according to his plans. He invented the prismatic cross employed in surveying, and named for him, and wrote 'Elemente der Vermessungskunde' (1856–58); 'Zur Brückenbaukunde' (1854); 'Zur Wasserbaukunde' (1866).

**BAUERNFELD,** bow'ĕrn-fĕlt, **Eduard von,** Austrian dramatist: b. Vienna, 13 Jan. 1802; d. Vienna, 9 Aug. 1890. He studied law and entered the government service in 1826, but resigned, after the revolutionary events of 1848, to devote himself exclusively to his literary pursuits. A brilliant conversationalist, he soon became a universal favorite in Vienna society. Intimate from childhood with the genial painter, Moritz von Schwind, and the composer, Franz Schubert, he also kept up a lifelong intercourse with Grillparzer. Among his comedies, distinguished for their subtle dialogue and sprightly humor, particularly the descriptions of fashionable society have made his great reputation. The best known and most successful were 'Reckless from Love' (1831); 'Love's Protocol' (1831); 'Confessions' (1834); 'Domestic and Romantic' (1835); 'Of Age' (1846); 'Krisen' (1851); 'Aus der Gesellschaft' (1866). His serious dramas were less popular. His collected works were issued (1871–73).

**BAUHIN,** bō-ăn, **Gaspard,** Swiss botanist and anatomist: b. Basel 1560; d. 1624. He was at first intended for the Protestant ministry, but having manifested a decided inclination for medicine and botany, was allowed to follow it, and studied first at Basel and then at Padua. After finishing his studies he traveled over many parts of Europe, and in 1580 returned to Basel, bringing with him a reputation which immediately secured him the chair of Greek, and in 1589 that of anatomy and botany. His fame rests chiefly on his two works, 'Pinax Theatri Botanici' and 'Theatrum Anatomicum, Botanicum.' Gaspard and his brother, Jean Bauhin, have been happily commemorated by Linnæus, who gave the name *Bauhinia* to a genus of plants.

**BAUHIN, Jean,** an eminent Swiss botanist: b. Basel 1541; d. 1613. He was a brother of Gaspard Bauhin, and distinguished himself by his ardor in natural history pursuits, in prosecuting which he traveled over the greater part of the Alps, Italy and the south of France, preparing materials for a 'Historia Universalis Plantarum Nova et Absolutissima,' which occupied the larger portion of his life but was not published till 1650, at Yverdon, 37 years after his death. This work, in which he describes 5,000 plants, divided into 40 classes or books, is considered the first in which an attempt was made to give a regular form to systematic botany.

**BAUHINIA,** a genus of about 150 species of tropical trees, shrubs or climbers of the family *Cæsalpiniaceæ,* with beautiful, showy, white to purple blossoms; named in honor of the brothers John and Gaspar Bauhin (q.v.). Some species are called mountain ebony from their dark-colored wood; *B. racemosa,* the maloo climber, and several other East Indian climbing species are used for making ropes; *B. variegata,* an Indian species, is used in tanning, dyeing and medicine, and its flower buds for pickles. In southern Florida and southern California several species are very popular as ornamental plants, but in greenhouses few succeed because of the difficulty of securing a dry enough atmosphere without injury to the plants. *B. natalensis, B. variegata* and *B. corymbosa,* probably the most satisfactory greenhouse species, may be treated like oleanders during the winter and planted out of doors in spring.

**BAUM,** boum, **Friedrich,** German military officer in the British service in the Revolution-

ary War. He arrived in Canada in 1776, and in Burgoyne's expedition acted as lieutenant-colonel of the Brunswick dragoons. He was sent out with 800 men and two pieces of artillery on a foraging expedition. Near Bennington, Vt., he was attacked by the New Hampshire militia under Stark and utterly defeated. He was killed 16 Aug. 1777.

**BAUMANN'S** (bou'mąns) **CAVERN** (German, *Baumanns Höhle*), an interesting natural cavern in the Harz, about five miles from Blankenburg, in a limestone mountain. It consists of six principal apartments, besides many smaller ones, everywhere covered with stalactites. The earthy ingredients of these petrifactions are held in solution by the water which penetrates the rock and deposits a calcareous stone. The name of this cavern is derived from a miner, who entered it in 1672, with the view of finding ore, but lost his way and wandered about for two days before he could find his way out again.

**BAUMBACH,** boum'baH, **Rudolf,** German poet: b. Kranichfeld, Saxe-Meiningen, 28 Sept. 1840; d. 22 Sept. 1905. After studying natural science in Würzburg, Leipzig, Freiburg and Heidelberg, he lived in Austria and then at Trieste, where he devoted himself exclusively to writing. In 1885 he removed to Meiningen. He most successfully cultivated the poetical tale, based upon ancient popular legends. His epics include 'Zlatorg,' a Slovenic Alpine legend (1875, 37th ed., 1892); 'Horand and Hilda' (1879); 'Lady Fair' (1881); 'The Godfather of Death' (1884); 'Emperor Max and His Huntsmen' (1888). His lyric collections are 'Songs of a Traveling Journeyman' (1878); 'Minstrel's Songs' (1882); 'From the Highway' (1882); 'Traveling Songs from the Alps' (1883); 'Adventures and Pranks Imitated from Old Masters' (1883); 'Jug and Inkstand' (1887); 'Thuringian Songs' (1891). He also published some excellent prose: 'False Gold' (1878), a historical romance of the 17th century; 'Summer Legends' (1881), a book of fairy tales; and 'Once Upon a Time' (1889).

**BAUMÉ,** bō-mā', **Antoine,** distinguished French chemist: b. Senlis, 26 Feb. 1728; d. 15 Oct. 1804. He obtained the professorship of chemistry in the College of Pharmacy at Paris about 1752; was admitted a member of the Academy of Sciences, chiefly in return for some excellent memorials communicated to that body; wrote 'Elements of Theoretical and Practical Pharmacy,' which went through nine editions in France and was translated into most European languages, and contributed by his discoveries to numerous important improvements in the arts, particularly in the manufacture of sal ammoniac, soap and porcelain, in gilding and the bleaching of silk. His name is familiar from the areometer which he invented and which is still in use.

**BAUMGARTEN,** boum'gär-tĕn, **Alexander Gottlieb,** German philosopher of the school of Wolff: b. Berlin 1714; d. Frankfort-on-the-Oder 1762. He studied at Halle and was for a time professor-extraordinary there. In 1740 he was made professor of philosophy at Frankfort-on-the-Oder. He is the founder of æsthetics as a science and the inventor of this name. He derived the rules of art from the works of art and their effects. Hereby he distinguished himself advantageously from the theorists of his time. (See ÆSTHETICS). His ideas of this science he first developed in his academical discussion, 'De Nonnullis ad Poema Pertinentibus' (1735). George Fr. Meier's 'Principles of all Liberal Sciences' (1748–50) originated from his suggestions. Eight years later, Baumgarten published his 'Æsthetica' (1750–58), a work which death prevented him from completing. Consult 'Schmidt, Leibnitz und Baumgarten' (Halle 1875).

**BAUMGARTEN, Hermann,** German historian: b. 28 April 1825; d. 19 June 1893. He was a professor of history in the University of Strassburg 1872–89, and published 'Geschichte Spaniens zur Zeit der französischen Revolution' (1861); 'Geschichte Spaniens vom Ausbruch der französischen Revolution bis auf unsere Tage' (1865–71); 'Karl V und die deutsche Reformation' (1889).

**BAUMGARTEN, Moritz Julius Maximilian Paul Maria,** German clergyman and historian: b. Rittershausen, Germany, 25 July 1860. He was educated at the universities of Bonn, Marburg, Breslau, Strassburg and Berlin, and at the Accademia dei Nobili Ecclesiastici, Rome. He began the practice of law in 1885; engaged in historical research work in various libraries and archives of Europe in 1887 and in 1888–89 was assistant at the Royal Prussian Historical Station in Rome. He was ordained to the Catholic priesthood in 1894 and held various ecclesiastical offices in Rome. He traveled Europe and the United States in the interests of scientific research; was president of the seventh section of the second International Congress of Christian Archæology, Rome 1900; and secretary of the fifth International Congress of Catholic Scholars, Munich 1900. He is a member of several scientific and historical societies and has received numerous decorations and medals. He is the author of 'Die deutschen Hexenprozesse' (1883); 'Hat das System Kneiff eine soziale Bedeutung?' (1892); 'Giovanni Battista de Rossi' (1892); 'Il dizionario di erudizione storico-ecclesiastica del Moroni ricerche intorno alla proprietà litteraria di esso' (1896); 'Die Katholische Kirche in Deutschland, der Schweiz, Luxemburg, und Oesterreich-Ungarn' (1900; rev. ed., 1907); 'Verfassung und Organization der Kirche' (1906); 'Die Werke von Henry Charles Lea und verwandte Bücher' (1908); etc. He is editor of 'Die Katholische Kirche unserer Zeit und ihre Diener' (3 vols., 1899–1901) and a contributor to the *Theologische Revue, Allgemeines Litteraturblatt, Litterarische Rundschau* and an occasional contributor to various scientific periodicals.

**BAUMGARTEN-CRUSIUS, Ludwig Friedrich Otto,** German Protestant theologian: b. Merseburg, 31 July 1788; d. Jena, 31 May 1843. He studied theology in Leipzig; became the university preacher in 1810; was appointed professor of theology at Jena, in 1817; and became widely known as a foremost champion of religious liberty. He was a learned and original thinker, but his writing is often obscure. His publications include 'Introduction to the Study of Dogmatics' (1820); 'Manual

of Christian Ethics' (1827); 'Outlines of Biblical Theology' (1828); 'Outlines of Protestant Dogmatics' (1830); 'Text-book of the History of Doctrines' (1832); 'Schleiermacher, His Method of Thought, and His Value' (1834); 'Considerations on Certain Writings of Lamennais' (1834), etc.

**BAUMGARTNER, Alexander,** Swiss writer: b. Saint Gall 1841. He became a member of the Society of Jesus in 1860, and after completing his theological studies in England, made a study of Scandinavian literature in Stockholm and Copenhagen. He published 'Goethe's Jugend' (1879); 'Longfellow's Dichtungen' (1878); 'Calderon,' a festival play (1881); 'Goethe und Schiller' (1886); 'Der Alte von Weimar' (1886); a translation from the old Icelandic of Eystein Asgninsson; and a history in eight volumes of the world's literature (1897).

**BAUMGARTNER, Andreas von,** Austrian statesman: b. 23 Nov. 1793, at Friedberg in Bohemia; d. 1865. He was connected for many years with the teaching of mathematics and physics, especially after 1823, at the University of Vienna, until illness forced him to relinquish his academical pursuits. Subsequently he became connected with the direction of the imperial porcelain, tobacco and other manufactures in 1841, with the establishment of electric telegraphs, and at the end of 1847 with the chief management of the construction of railways. After the revolution of 1848 he occupied for a third time a seat in the Austrian Cabinet as Minister of the Mining Department and of Public Works. In May 1851 he became Minister of Finance and Commerce, and in 1855 was made president of the Austrian Academy of Sciences. In 1861 he entered the House of Peers of the Reichsrath. His principal works are on mechanical science applied to arts and industry. His most popular work is the 'Naturlehre,' which has passed through many editions and was a textbook in all the schools of Austria.

**BAUR,** bour, **Ferdinand Christian,** one of the most celebrated theologians of modern Germany, founder of the "New Tübingen School of Theology": b. Schmiden, where his father was pastor, 21 June 1792; d. 2 Dec. 1860. At the University of Tübingen, which he entered in 1809, he devoted five years to theological studies, and in 1817 became professor in the seminary at Blaubeuren. While holding this position he published his first work, 'Symbolism and Mythology, or the Natural Religion of Antiquity' (1824–25), by which his eminent theological abilities were so clearly manifested that in 1826 he received a call to Tübingen as ordinary professor in the evangelical faculty of that university. This position he continued to occupy till his death. His chief works belong to the two departments of the history of the Christian dogmas and New Testament criticism, in both of which his views have had the most powerful effect upon the theology of the present day. His most important works belonging to the first class are 'The Christian Gnosis, or the Christian Philosophy of Religion' (1835); 'The Christian Doctrine of the Atonement' (1838); 'The Christian Doctrine of the Trinity and the Incarnation' (1841–43); 'Compendium of the History of Christian Dogmas' (1847). To the second class belong 'The So-called Pastoral Epistles of the Apostle Paul' (1835); 'Paul the Apostle of Jesus Christ, His Life and Labors, His Epistles and His Teaching' (1845); 'Critical Inquiries Concerning the Canonic Gospels, Their Relation to One Another, Their Origin and Character' (1847). He also wrote the 'History of Christian Doctrine from the Origin of Christianity Down to the End of the 18th Century,' a series of volumes between 1853–63. Consult Nash, H. S., 'History of the Higher Criticism of the New Testament' (New York 1901).

**BAUR, Frederick Wilhelm von,** Russian military engineer: b. Hanau, Germany, 1735; d. Saint Petersburg 1783. He early adopted a military life, entered the British service in 1755 and in 1757 he obtained the rank of general and engineer-in-chief. Frederick II of Prussia ennobled him. In 1769 he entered into the service of Catherine II, Empress of Russia, and was employed against the Turks. The Empress had a high notion of his talents, and employed him in making the aqueduct of Tsarskoe-Selo for supplying Moscow with water, and in deepening the canal near Saint Petersburg, at the end of which he constructed a large harbor, and completed other important undertakings. Baur had for his secretary the celebrated Kotzebue, who directed in his name the German theatre at Saint Petersburg.

**BAUR, Gustav Adolf Ludwig,** German theologian; b. Hammelbach 1816; d. 1889. He was appointed a professor at Giessen in 1847, and in 1870 at Leipzig. He belonged to the Schleiermacher school and was the author of 'Grundzüge der Homiletik' (1848); 'Boëtius und Dante' (1874); 'Die Vorchristliche Erziehung' (1884).

**BAUSMAN, Benjamin,** American Reformed (German) clergyman: b. Lancaster, Pa., 28 Jan. 1824; d. Reading, Pa., 8 May 1909. He founded Saint Paul's Reformed Church, Reading, Pa., 1863, and was its pastor until his death. He published 'Sinai and Zion' (1860; 7th ed., 1885); 'Wayside Gleanings in Europe' (1876); 'Bible Characters' (1893); 'Catechetics and Catechetical Instruction' (1893); 'Precepts and Practice' (1901); and edited *The Guardian* (1867–82), and *Reformirter Hausfreund* (1882).

**BAUSSET,** bō-sā, **Louis François** (CARDINAL), French ecclesiastic: b. Pondicherry, India, 14 Dec. 1748; d. Paris, 21 June 1824. His father, who held an important position in the French Indies, sent young Bausset to France when he was but 12 years of age. He was educated by the Jesuits, and became bishop of Alais in 1784. Having signed the protest of the French bishops against the civil constitution of the clergy, he emigrated in 1791, but in the following year returned to France, was soon arrested, and imprisoned in the old Convent of Port Royal, where he remained until after the fall of Robespierre. After the restoration of Louis XVIII, in 1815, he entered the Chamber of Peers; the following year he became a member of the French Academy; and, in 1817, he received the appointment of cardinal. He wrote the 'History of Fénelon'

(1808–09), at the request of the Abbot Emery, who had in his possession the MSS. of the illustrious archbishop of Cambray. The work had great success, and its author was awarded, in 1810, the second decennial prize of the Institute, for the best biography. His 'History of Bossuet' (1814) was less favorably received.

**BAUTAIN,** bō-tăn, **Louis Eugene Marie,** French philosopher: b. Paris, 17 Feb. 1796; d. 18 Oct. 1867. He entered the Church, and became a priest in 1828; resigned his professorship in 1830; and later was suspended as a priest because of his work, 'La Morale de l'Evangile comparée à la Morale des Philosophes'; but was reinstated in 1841. He was made dean of the Faculty of Letters at Strassburg in 1838, and subsequently director of the College of Juilly. At a still later period he was transferred to Paris, and made vicar-general of the Metropolitan diocese. He was also appointed a member of the theological faculty of Paris. His writings include 'Philosophie-psychologie experimentale' (1839); 'Philosophie morale' (1842); 'Philosophie du Christianisme' (1835); 'La Religion et la Liberté considerées dans leurs rapports' (1848); 'La Morale de l'Evangile comparée aux divers systémes de morale' (1855), etc.

**BAUTZEN,** bout'sĕn, or **BAUDISSIN,** bow'desen, Germany, a manufacturing town in Saxony, noted for its production of textile fabrics, leather, paper, etc. It overlooks the river Spree, 30 miles northeast of Dresden, and is encircled by ancient walls and moat now converted into promenades. The cathedral church of Saint Peter is used by both Protestants and Roman Catholics, it being divided into two portions for the purpose. The town contains many schools, a museum, art gallery and three libraries. At Bautzen Napoleon, with 130,000 men, defeated the allied armies of Russia and Prussia, 20–21 May 1813. Pop. 32,760.

**BAUXITE,** or **BEAUXITE,** bo'zīt (from Baux, or Beaux, near Arles, France, where it occurs), a native, hydrated oxide of aluminum, having the formula $Al_2O_3.2H_2O$. It has a specific gravity of about 2.5, and its hardness ranges from 1 to 3. It occurs massive, in concretionary grains showing a concentric structure and in clay-like deposits. Sesquioxide of iron is usually present in considerable quantity,—sometimes to the extent of 50 per cent,—part of it replacing aluminum, and part occurring merely as an impurity. Bauxite is found in many parts of the world. One of the most interesting deposits is at Irish Hill, near Larne, county Antrim, Ireland, where it occurs in the iron measures together with lignite. At this place three layers of it are known, having an aggregate thickness of about 50 feet. The finest grade from Irish Hill is almost free from iron, containing as little of that metal as good china clay. Analyses have shown that the color of bauxite is no criterion of the freedom of the mineral from iron, since a white variety containing 3.67 per cent of $Fe_2O_3$ is known, while a certain strongly red variety showed, upon analysis, but 3.75 per cent, and a yellow specimen contained 14.39 per cent. In the United States bauxite occurs in considerable quantities in Saline and Pulaski counties, Ark., and in a deposit extending from Calhoun County, Ala., eastward into Georgia. Bauxite forms the principal ore of the metal aluminum. The American deposits of bauxite are well suited to the production of aluminum, as ore can be had in quantity that contains as little as 1 per cent of iron oxide, and 3 per cent of silica. Bauxite, in some localities, is undoubtedly an alteration product of basaltic rocks, while in other localities (especially in the United States) it has very likely been deposited by hot springs. The deposits of Georgia and Alabama are thought to have resulted from hot springs, the waters of which were rendered acid by passing through pyritic shales. The sulphuric acid is believed to have reacted with shale beds changing the kaolin to aluminum sulphate. As this passed on upward through limestone beds, the reaction freed $Al_2O_3$ as follows: $Al_2(SO_4)+CaCO_3 = 3CaSO_4+Al_2O_3+3CO_2$. The gelatinous $Al_2O_3$ was then deposited as bauxite. The Arkansas deposits are believed to be residual from the weathering of syenite. In addition to its use as an ore of aluminum, bauxite forms an important source of alum. Its clay-like form is known as wocheinite, on account of its occurrence at Wochein, in Styria. The world's product of bauxite was in 1910 about 310,000 tons; 1914 about 350,000 tons; and 1915 something over 500,000 tons; the average value in the United States being about $3 per ton. Of the 1915 production the United States is credited with 297,000 tons; France, 180,000; United Kingdom, 20,000; Italy, 10,000; Japan, 250; India, 110; all other countries, 2,600. Consult Hayes, C. Willard, 'Bauxite' (Sixteenth Annual Report of the United States Geological Survey, Part 3, Washington 1896); Branner, 'The Bauxite Deposits of Arkansas' (*Journal of Geology,* Vol. V, 1897, p. 263); Mead, J. W., 'Bauxite Deposits of Arkansas' (Econ. Geol., Vol. X, 1915, p. 28). See ALUMINUM; MINERAL PRODUCTION OF THE UNITED STATES.

**BAVARIA** (German, *Bayern;* French, *Bavière*), a kingdom in the south of Germany, the second largest state of the empire, composed of two isolated portions, the larger comprising about twelve-thirteenths of the monarchy, bounded on the east by Bohemia and Upper Austria; on the south by Salzburg and the Tyrol; on the west by Würtemberg, Baden, Hesse-Darmstadt and Hesse-Nassau; and on the north by Hesse-Nassau, Weimar, Meiningen, Reuss, Coburg-Gotha and the kingdom of Saxony. It lies between lat. 47° 16′ and 50° 34′ N., and long. 8° 59′ and 13° 50′ E. The smaller portion, the Pfalz or Palatinate, lies west of the Rhine, which forms its eastern boundary, and is separated from the main body by Würtemberg, Baden and Hesse-Darmstadt. It is included between lat. 48° 57′ and 49° 50′ N., and long. 7° 4′ and 8° 31′ E.; and is bounded south by Alsace-Lorraine, west by the Prussian Phine province, and north by Hesse-Darmstadt and the Prussian Rhine province. Bavaria is estimated to contain an area of 30,346 English square miles, and is divided into eight circles (*Kreise*), which were formerly named after the rivers that watered them; but an edict of 29 Nov. 1837 gave the circles new names and new boundaries. The following

table shows their names, areas and populations:

| Circles | Area, Sq. M. | Pop. 1905 | Pop. 1910 |
|---|---|---|---|
| Oberbayern (upper Bavaria) | 6,686 | 1,413,788 | 1,532,065 |
| Niederbayern (lower Bavaria) | 4,298 | 707,367 | 724,331 |
| Pfalz (Palatinate) | 2,372 | 885,833 | 937,085 |
| Oberpfalz (upper Palatinate) and Regensburg (Ratisbon) | 3,862 | 574,693 | 600,284 |
| Oberfranken (upper Franconia) | 2,798 | 637,700 | 661,862 |
| Mittelfranken (middle Franconia) | 3,036 | 868,846 | 930,868 |
| Unterfranken (lower Franconia) and Aschaffenburg | 3,360 | 682,532 | 710,943 |
| Schwaben (Swabia) and Neuburg | 3,934 | 753,177 | 789,853 |
| Total | 30,346 | 6,524,372 | 6,887,291 |

The capital is Munich (q.v.), and the other principal cities are Nuremberg, Augsburg, Würzburg and Regensburg or Ratisbon (qq.v.).

**Mountains.**— Bavaria is a hilly rather than a mountainous country. A large portion, more especially south of the Danube, is a plateau country of considerable elevation, and, indeed, the whole of the main portion of the kingdom may be described as an upland valley, averaging about 1,600 feet above the sea-level, intersected by numerous large streams and ridges of low hills. On all sides it is surrounded by hills of a greater or less altitude, either quite upon the frontier or only at small distances from it. The whole southern frontier is formed by a branch of the Noric Alps, offsets from which project far into the southern plateau of Bavaria, forming the Algäuer Alps, the Bavarian Alps and the Salzburger Alps. Besides numerous peaks which these ranges contain, varying from 4,000 to 8,000 feet high, the following may be named as being above the latter number: The Zugspitze, 9,720 feet; the Watzmann, 8,900 feet; the Hochvogel, 8,460 feet; the Madeler Gabel, 8,650 feet. Passing along the valley of the Inn and across the Danube, we come to the Bohemian frontier, formed by the Böhmerwald Mountains running southeast to northwest and lowering down at the valley of the Eger. The highest peaks in this range are the Rachel, 5,102 feet, and the Arber, 5,185 feet. Crossing the Eger we meet with the Fichtelgebirge, presenting the Schneeberg, 3,455 feet high, and the Ochsenkopf, 3,360 feet. West from this range, and along the frontier of the Saxon ducal territories and Hesse-Cassel, run hills of moderate elevation, under various names, Frankenwald, Rhöngebirge, etc., no peaks of which attain an elevation of more than 3,327 feet. The western mountain boundary of the Bavarian Valley is formed north of the Main by the Spessartwald Range, and in the kingdom of Würtemberg by the Alb or Alp. The only noteworthy interior ranges are in the northwest the Stelgerwald; and in the northeast, running in a southwesterly direction from the Fichtelgebirge, the Franconian Jura; a low limestone range, containing numerous remarkable stalactitic caves. The Pfalz or Palatinate is traversed by the northern extremity of the Vosges, the highest peak in this locality being the Königstuhl, 2,162 feet.

**Lakes.**— The lakes of Bavaria are neither very numerous nor of very great extent, though many of them present exceedingly picturesque scenery. The larger are all situated on the upper part of the southern plateau; the smaller within the range of the Noric Alps. The most remarkable of the former are, Lake Ammer, about 10 miles long by three and three-quarters broad, 1,736 feet above the sea; Lake Würm or Starnberg, about 12 miles long by three broad, 1,899 feet; and Lake Chiem, seven miles long by seven and one-half broad, 1,651 feet above the sea. Of the smaller, the more remarkable are Lake Tegern, about three miles long, 2,586 feet; Lake Walchen, 2,597; Königs-See, five miles long, 1,975 feet; and various others upward of 2,000 feet above the sea-level. Most of the lakes are well supplied with fish.

**Rivers.**— Bavaria belongs wholly to the basins of the Danube and the Rhine, with the exception of a very small portion in the northeast corner, which through the Eger and Thuringian Saale appertains to the basin of the Elbe. The river Danube intersects the main portion of the kingdom west to east nearly in the centre, and before it enters the Austrian dominions at Passau, where it is still 925 feet above the sea, it receives on its right bank the rivers Iller, Lech and Isar, which have their sources in the Noric Alps, and the Inn, besides numerous smaller streams; and on its left bank, the Wörnitz, Altmühl, Nab and Regen, besides other lesser streams. The Main traverses nearly the whole of the northern part of this portion of the kingdom from east to west, and is navigable for steam vessels from Bamberg to the Rhine. It is connected with the Danube by the Ludwigs Canal, the most important in Bavaria. Its principal affluents are the Regnitz and the Saale. In the Palatinate there are no streams of any importance, the Rhine being merely a boundary river. Large tracts of marshy land are characteristics of southern Bavaria.

**Climate.**— If we except the valley of the Rhine, and the valley of the Main in lower Franconia, Bavaria, even including the Palatinate, is, in comparison with other German states, a cold country. The average temperature of the year is about 47° F.; winter, 30°; spring 47°; summer, 63°; and autumn, 47°. The rainfall averages from 23.5 inches in the Rhine Palatinate to over 78 inches in southern Bavaria.

**Soil, Vegetation, etc.**— Bavaria is one of the most favored countries in Germany in respect of the fruitfulness of its soil, due, no doubt, in a considerable degree, to the undulating nature of the country, to the numerous streams by which it is watered and to being nearly wholly composed of Jura limestone. In the plains and valleys the soil is capable of producing all kinds of crops, but not till lately were the natural advantages of the country turned to good account. Ignorance and idleness opposed a barrier to improvement, which it took the utmost efforts of an enlightened government, aided by the general spread of education, to remove. Now a spirit of agricultural enterprise pervades the kingdom, many co-operative societies have been formed, improved methods of cultivation have been introduced and large tracts of waste land have been reclaimed and brought under the plow. To the general productions of the soil may be added tobacco and

fruit, of which large quantities are grown in the valleys of the Main and the Rhine. In the circles of Mittelfranken and Schwaben-Neuburg, the hop plant is cultivated to a considerable extent. Nearly one-half of the total area is now under cultivation and one-sixth under grass. In 1912 the areas under the chief crops were: Wheat, 725,937 acres, yielding 489,785 metric tons; rye, 1,417,972 acres, yielding 929,644 metric tons; summer-barley, 903,440 acres, yielding 668,780 metric tons; oats, 1,267,388 acres, yielding 744,661 metric tons; potatoes, 927,015 acres, yielding 4,708,746 metric tons; hay, 3,208,037 acres yielding 4,883,742 metric tons.

In 1913 there were 43,690 acres, which yielded 6,658 metric tons of hops. The vine is chiefly grown in the circles of Pfalz and Unterfranken. The latter produces the Franconian wines; the best wines of the former are produced near Deidesheim and Wachenheim. The celebrated Steinwein and Leistenwein are the produce of the southern slope of the Marienburg, near the town of Würzburg. In 1912 there were altogether 51,625 acres under vines, yielding 12,652,622 gallons of wine. The forests of Bavaria, composed chiefly of fir and pine trees, cover nearly a third of its entire surface and yield a large revenue, estimated at about $10,000,000 annually. About 49 per cent belongs to private persons, 34 per cent to the state and the rest chiefly to the communities. Land is rented for grazing and much timber is annually exported, together with potashes, tar, turpentine and other products peculiar to these wooded regions. The principal mineral products are salt, coal and iron. Some of the mining works belong to the state and contribute something to the public revenue; but the minerals are not wrought to the extent they might be. The coal output in 1913 was 1,895,715 metric tons; iron ore, 450,074 tons; pig-iron, 195,606 tons; cast-iron wares, 201,050 tons; sulphuric acid, 163,343 tons. The chief salt works are at Rosenheim, Graunstein, Reichenhall and Berchtesgaden. There are celebrated mineral springs at Kissingen and Reichenhall. Plumbago is found in several places and is principally manufactured into pencils. Porcelain clay of the finest quality likewise abounds in some localities, the best being obtained in the district of Wunsiedel on the upper Main. Lithographic stones are another important production. In the breeding of live-stock Bavaria is only excelled by Prussia among the German states. In 1912 the number of horses was 401,990; of mules and asses, 700; cattle, 3,560,723; sheep, 474,000; swine, 1,814,418; goats, 315,122; fowls, 10,319,000. Wild fowl are abundant. The wolves and bears with which the forests of Bavaria were at one time infested are nearly extinct.

**Manufactures.**— The manufactures of Bavaria are singly not very important, being mostly on a small scale and conducted by individuals of limited capital. The principal articles manufactured are linens, woolens, cottons, silks, leather, paper, glass, earthen, iron and steel ware, jewelry, etc., but the supply of some of these articles is inadequate to the home consumption. Of leather, paper, glass and ironware rather large quantities are exported. There are also tobacco and beet-sugar factories, tanneries and chemical works. The optical and mathematical instruments made at Munich are the best on the Continent and are prized accordingly. But the most important branch of manufacture in Bavaria is the brewing of beer — the universal and favorite beverage of the country. The per capita production was about 60 gallons in 1912; total amount brewed was 424,605,764 gallons. The amount of alcohol produced was 3,581,028 gallons. The beer, however, is not only consumed in the country of its production, but is sent to all parts of Germany and even as far as America and India. A portion of the industrial population maintain themselves by weaving linen and by the manufacture of articles in wood (some of which are of beautiful workmanship), and by the felling and hewing of timber. Among the exports are corn, timber, wine, cattle, leather, glass, hops, fruit, beer, iron and steel wares, machinery, fancy articles, toys, colors, lucifer matches, stoneware, etc. Among the imports are coffee, cacao, tea, cotton, tobacco, drugs, copper, oil, spices, dyestuffs, silk and silk goods, lead, etc.

**Transportation.**— From its position Bavaria enjoys a considerable portion of transit trade, much facilitated by the good roads that traverse the country in all directions. The means of communication are now very complete. The Danube, the Rhine, the Main, the Regnitz, etc., afford ample scope for inland navigation, besides the Kõnig Ludwig Canal, which connects the Main near Bamberg with the Altmühl a short distance above its embouchure in the Danube, thus establishing direct water communication through the Rhine between the North Sea and the Black Sea. The railway system has been carried out on an extensive scale. The lines are partly state property, partly private. The number of miles in operation amounted in 1914 to 5,173 miles, of which 5,102 miles were normal gauge and 71 miles narrow gauge. The railway debt was $485,165,320, and the gross receipts from the state railways $77,083,200. The state also possesses two canals. Bavaria's foreign trade is embraced in that of the German Customs Union. In 1913 there were 19,626 miles of telegraph lines.

**Education and Art.**— The department of education is under the superintendence of the Superior Board of Education and Ecclesiastical Affairs. A complete system of inspection is established throughout the country, the reports of the inspectors including not only the number and proficiency of the scholars, but also the conduct of the teachers, the state of the buildings and the nature and extent of the funds available. It is necessary in Bavaria, before admission can be obtained into any higher school, to have passed a satisfactory examination in the lower school. Not only must all candidates for offices under the state pass examinations, but examinations are held of apprentices in trade who wish to become masters, and even of the officers in the army on promotion. In 1911-12 there were 7,727 elementary schools, with 19,109 teachers and 1,064,579 pupils; 333 agricultural schools, with 6,847 pupils, besides 442 winter schools, with 1,877 pupils. Attendance at school is compulsory from 6 to 16 years of age. There are

three universities in Bavaria — two of which (Munich and Würzburg) are Roman Catholic and one (Erlangen) Protestant. In 1913–14 the University of Munich had 265 professors and instructors and 6,802 pupils; that of Würzburg, 101 professors and instructors and 1,515 pupils; and that of Erlangen, 81 professors and instructors and 1,341 pupils. There are also several lycea, 43 gymnasia, numerous Latin, normal and polytechnic schools, besides academies of arts and sciences, fine arts, horticulture, etc. The capital, Munich (pop. 1915 about 630,000), contains a library of about 1,100,000 volumes and 50,000 MSS., several scientific and literary institutions, academies and national societies, and extensive collections of works of art.

Bavaria enjoys the honor of having originated a school of painting of a high order of merit, known as the Nuremberg school, founded about the middle of the 16th century by Albert Dürer (q.v.), a native of that town, whose works are little, if at all, inferior to those of his great Italian contemporaries. Hans Holbein (q.v.), who excelled Dürer in portrait, though far behind him in historical painting, was also a native of Bavaria, having been born at Augsburg about 1460. To these celebrated names have been added those of the eminent sculptors Kraft and Vischer (qq.v.), both also Bavarians; the former born probably at Nuremburg about 1450–55 and the latter about 1460. The masterpiece of the latter distinguished artist is the bronze shrine of Saint Sebaldus in Nuremberg, esteemed a marvel of art for beauty of design and delicacy of workmanship. The most celebrated of Kraft's works is the remarkable tabernacle in stone affixed against one of the columns of the choir of the church of Saint Lawrence, also in Nuremberg. The restoration of Bavarian pre-eminency in modern times, in connection with the fine arts, is, in a great measure, if not entirely, owing to Louis I, whose love of art and liberal patronage have rendered the capital one of the most celebrated seats of fine arts in Europe. His grandson, Louis II, was a great patron of music and the protector of Richard Wagner.

**Religion.**— The religion of the state is Roman Catholicism, which embraces more than seven-tenths of the population. The remainder are principally Protestants and Jews. In 1910 the Roman Catholics numbered 4,862,233; Protestants, 1,942,385; Jews, 55,065. The proportion between Catholics and Protestants has scarcely varied during the last three-quarters of a century. All citizens, whatever their creed, are equally admissible to the same public functions and employments, and possess the same civil and political rights. The articles of the concordat concluded with the Pope are subordinate in their application to the fundamental law of the state. By an ordinance of Louis I females are prohibited from pronouncing any monastic vow until having passed their 33d year. The dioceses of Bavaria comprise two archbishoprics, Munich and Bamberg; and six bishoprics, Augsburg, Ratisbon, Eichstadt, Passau, Würzburg and Spires. The Salaries are paid by the government. The Protestant Church is under a general consistory and three provincial consistories. In Bavaria marriage between individuals having no capital cannot take place without the consent of the principal persons appointed to superintend the poor institutions, who, if they grant such liberty where there are no means of supporting the children that may spring from such marriage, render themselves liable for their maintenance. The law is intended to prevent improvident marriages.

**People.**— In personal appearance the Bavarians are stout and vigorous, well adapted to bear the fatigues of war, and are generally considered good soldiers. Of a lighter, gayer temperament than the Prussians, they are sometimes accused of being indolent and somewhat addicted to drinking, but are brave, patriotic and faithful to their word. Their manners and customs toward the close of the 18th century were described as very coarse, and they were said to be deeply imbued with superstitious bigotry; but since the more general diffusion of knowledge a great change for the better has taken place. Many of the peasantry wore long, loose, snuff-colored coats, lined or edged with pink, and studded in front with silver or white metal buttons, thrown open to display a smart waistcoat of various and brilliant colors; their hats were often ornamented with artificial flowers. Many of the Bavarian women are handsome, lively and graceful. They dress smartly and display much taste in their attire. Some of them wear black silk handkerchiefs, decorated with flowers or ribbons, tied tightly around their heads; some caps of silver or gold tissue, and all have their hair neatly braided. German is the language spoken, with local peculiarities, but Bavarians have never been conspicuous for the cultivation of their native tongue.

**Constitution.**— Bavaria became a member of the North German Confederation by the Treaty of Versailles, 23 Nov. 1870, and now forms part of the German empire, but possesses certain special privileges in regard to the administration of the army railways and posts, and the collection of revenue for its separate budget. It is a constitutional monarchy, the crown being hereditary in the male line, or if that fails, in the female line. The executive is in the hands of the king, but a ministry of seven members is responsible for his acts, and he is advised by a state council consisting of the seven ministers, nine other members and one royal prince. The executive power is exercised jointly by the king and Parliament, consisting of an upper and lower House. The former is composed of princes of the royal family, the great officers of state, the two archbishops, the head of certain noble families, and about 30 other hereditary councillors, a bishop named by the king, the president of the Protestant General Consistory, and a certain number of life members appointed by the Crown, which must not exceed one-third of the hereditary councillors. The number of deputies, or members of the lower House, is fixed at 163, being at an average rate of one for every 38,000 inhabitants. They are elected for six years, since 6 April 1906, by direct secret vote, to which every citizen over 25 years old, who has paid a direct tax for at least a year, is entitled. Bavaria is represented in the Imperial Bundesrat by six members, and in the Reichstag by 48. In regard to local administra-

tion the country is divided into eight provinces, or government districts, subdivided into administrative districts. Each government district has a provincial government consisting of two boards, one for the management of the police, schools, etc., and the other for the management of financial affairs; and each has a landrat, consisting of representatives of the districts, towns, clergy, landed nobility and university, if there be one. The budget is voted for two years. The estimates for 1914–15 balanced at $196,267,182. The total debt for 1911 amounted to $606,820,789, of which $478,328,800 were for railways. The army is raised by conscription — every man being liable to serve from 1 January of the year in which he completes his 20th year — and it forms an independent part of the army of the German empire, namely: 1st, 2d, 3d Bavarian army corps. In the time of peace it is under the command of the king of Bavaria, but in time of war it is placed under that of the German Emperor as commander-in-chief of the whole German army. The period of service is two years in the ranks, five in the reserve, five in the Landwehr or second army line, six in the Landsturm for home defense, cavalry and horse artillery three, four, three and six. On a peace footing the Bavarian army is between 72,000 and 73,000 men. No Bavarian can settle or marry, except by definite appointment, till he has fulfilled his military liabilities.

**History.**— The earliest inhabitants of what is now known as Bavaria were a Celtic tribe who were conquered by the Romans about 15 B.C. The district became part of the Roman provinces of Noricum and Vindelicia, later incorporated with Raetia. After the fall of the Western empire in the 5th century the territory was overrun by various Germanic tribes; probably descendants of the Marcomanni and Quadi; who were called Boiarii, because they came from Bojerland or Bohemia. These Boiarii soon were made tributary by the Franks, and were ruled over by dukes of the Agilolfing family, probably of Franklsh descent, as early as the 6th century. In the 8th century the bishoprics of Salzburg, Freising, Regensburg and Passau were founded or restored. Charlemagne made Bavaria a part of his kingdom, and on the death of the monarch the kings of the Franks and Germans governed it by their lieutenants. In 1070 Bavaria passed into the possession of the family of Guelphs, and in 1180 it was transferred by imperial grant to Otho, Count of Wittelsbach. In 1214 the family came into possession of the Rhenish Palatinate, but this was separated from Bavaria in the following century. In 1623 Duke Maximilian of Bavaria received the title of Imperial Elector, and five years later acquired the upper Palatinate. In 1777, on the extinction of the direct Bavarian line of the Wittelsbach, the succession passed to the Elector Palatin, Charles Theodore, and thus the Palatine, to which were added the duchies of Juliers and Berg, was reunited to Bavaria. In 1799 the Duke Maximilian Joseph of Zweibrücken came into possession of all the Bavarian territories. The Peace of Lunéville (9 Feb. 1801) essentially affected Bavaria. While it lost the Palatinate and the duchies of Zweibrücken and Julich, it obtained, on the other hand, by an imperial edict of 1803 an indemnification by which it gained, in addition to the amount lost, a surplus of 2,109. square miles and 216,000 inhabitants.

In 1805 Bavaria, having espoused the side of Napoleon, was raised, by the Treaty of Pressburg, to the rank of a kingdom, with some further accessions of territory, most of which were confirmed by the treaties of 1814 and 1815, by which also a great part of the lands of the Palatinate was restored. In 1818 Bavaria entered on a period of constitutional reform and on 26 May of that year the Constitution was proclaimed. In 1848 the conduct of King Louis I, in maintaining an open liaison with Lola Montez, who became supreme in the state had thoroughly alienated the hearts of his subjects, and quickened that desire of political change which had previously existed. The people, early in March 1848, demanded immediate convocation of the chambers, liberty of the press, public judicial trials; also that electoral reform should be granted, and that the army should take an oath to observe the Constitution. The King having refused to grant these demands, tumults occurred, and King Louis announced his resignation of the sceptre to his son, Maximilian II, under whom the reforms and modifications of the Constitution were carried out. Maximilian died in 1864 and was succeeded by Louis II. In the war of 1866 Bavaria sided with Austria, in consequence of which it was obliged, by the treaty of 22 August in the same year, to cede a small portion of its territory to Prussia, and to pay a war indemnity of $12,150,000. Soon after Bavaria entered into an offensive and defensive alliance with Prussia, and in 1867 joined the Zollverein under Prussian regulations. In the Franco-German War of 1870–71 Bavaria took a prominent part, and since 1871 it has been one of the constituent states of the German empire, represented in the Bundesrath by 6, in the Reichstag by 48 members. In 1886 King Ludwig II committed suicide through alienation of mind. His brother Otto succeeded, but he being also insane, his uncle, Luitpold, became regent. On 12 Dec. 1912 he was succeeded as regent by his son Louis, who, yielding to popular demand, was proclaimed king as Ludwig III, 5 Nov. 1913. After 40 years' confinement as a lunatic King Otto died in 1916.

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**BAVIAD AND MÆVIAD, The,** two satires, by William Gifford. It was through these that the author, who later was the first editor of the 'Quarterly Review,' became known. 'The Baviad' (1792) is an attack on a band of English writers, who had formed themselves into a kind of mutual admiration society. It is an imitation of the first satire of Perseus, and in it the author not only attacks the "Della Cruscans," but all who sympathize with them. The 'Mæviad' (1795) is an imitation of the 10th satire of Horace, and was called forth, the author says, "by the reappearance of some of the scattered enemy."

**BAVIECA,** bą-wyā'ką, the favorite horse of the Cid.

**BAVIUS, MARCUS** and **MÆVIUS,** still notorious as two miserable poets and presumptuous critics, satirized by Virgil. The words are often used to signify bad or malevolent poets.

**BAWBEE,** bôr-bē' (French, *bas billon,* "low" or "debased billon"), a coin originally minted in Scotland from an alloy of copper with a very small amount of silver, called billon, and having at different times a value varying from 1½ to 3 cents. The coin is no longer issued, but the term is used in Scotland to mean a half-penny (a cent) or a very small value.

**BAX, Ernest Belfort,** English socialist: b. Leamington, 23 July 1854. He was educated in London and Germany; followed journalism in Germany as foreign correspondent in 1880–81; and returning to England, became one of the founders of the English socialist movement. In 1885 he aided in starting the Socialist League. He has written a large number of works on socialistic and historical subjects.

**BAXTER, James Phinney,** American author: b. Gorham, Me., 23 March 1831. A successful merchant and manufacturer, he was six times mayor of Portland, Me., to which he presented the land and building for a public library. He presented also a memorial library and museum to his native town, erected on his father's estate. A devoted student of the history of his native State, he has published 'George Cleeve of Casco Bay' (1885); 'Journal of Lieutenant W. Digby' (1888); 'Sir Ferdinando Gorges and His Province of Maine' (1890); 'The Pioneers of New France in New England' (1894); 'A Memoir of Jacques Cartier with a New Translation of His Voyages' (1905); 'The Greatest of Literary Problems' (1915). He published 19 volumes of 'A Documentary History of Maine,' and many other historical and literary monographs. He was long the president of the Portland Savings Bank, and president and director of other institutions. Initiated, organized and was first president of the Associated Charities of Portland, also the Portland Society of Art; started its first art school in 1884; president of the Maine Historical Society, the Portland Benevolent Society and the New England Historical Genealogical Society; a member of the council of the American Antiquarian Society, member of the American Historical Society, Massachusetts Historical Society the American Society of Arts and Sciences, and other literary societies at home and abroad.

**BAXTER, Jere,** American lawyer: b. Nashville, Tenn., 11 Feb. 1852. He traveled in Europe, studied law and reported the decisions of the Supreme Court of Tennessee, 9 volumes. He became prominent in railroad enterprises, particularly in schemes devoted to the opening up of the mineral and timber resources of his State. He was president of the Memphis & Charleston Railroad before reaching the age of 30, and he organized and built the Tennessee Central Railroad, of which corporation he was president. He was instrumental in the founding and extension of industrial towns, and was a member of the Tennessee senate.

**BAXTER, Lucy E.** (BARNES), English art writer: b. Mere, Wiltshire, about 1835; d. Florence, Italy, 10 Nov. 1902. She was the daughter of William Barnes, the Dorset poet, and wrote over the pen name of LEADER SCOTT. After her marriage to Mr. S. T. Baxter in 1867, she resided in Italy, where she was made an honorary member of the Accademia delle Belle Arti. She was the author of 'The Painter's Ordeal'; 'A Nook in the Apennines' (1879); lives of Fra Bartolommeo, Andrea del Sarto, Fra Angelico and Lucadella Robbia; 'The Renaissance of Art in Italy' (1882); 'Messer Agnolo's Household, a Unique Cento Florentine Story' (1882); 'Ghiberti and Donatello' (1882); 'A Bunch of Berries' (1883); 'Sculpture, Renaissance and Modern' (1886); 'Tuscan Studies and Sketches' (1887); 'Life of William Barnes' (1888); 'Vincigliata and Mariano' (1891); 'The Orti Orcellari' (1893); 'Echoes of Old Florence' (1894); 'The Castle of Vincigliata' (1897); 'The Cathedral Builders,' her most important work (1899); 'Filippo di Ser Brunellesco' (1901).

**BAXTER, Richard,** English divine: b. near Shrewsbury 1615; d. 8 Dec. 1691. After receiving a somewhat desultory and defective education he was sent to London under the patronage of Sir Henry Herbert, master of the revels; but he soon returned to the country to study divinity, and in 1638 received ordination in the Church of England. In 1640 he refused to take the oath of universal approbation of the doctrine and discipline of the Church of England, usually known as the *et cætera* oath, and in the following year he became minister at Kidderminster, with the best results to the morality of the town. When the civil war broke out he sided with the Parliament, and after the battle of Naseby accepted the appointment of chaplain to Colonel Whalley's regiment. He is said to have been, the whole of this time, a friend to the establishment, according to his own notions. In 1647 he retired, in consequence of ill health, from his military chaplainship, and when he recovered preached against the Covenant. He even endeavored to persuade the soldiery not to encounter the Scottish troops who came into the kingdom with

Charles II, and did not hesitate to express an open dislike to the usurpation of Cromwell. The fact is that Baxter held civil liberty to be of secondary consequence to what he esteemed true religion, and appears, from a sermon preached before Cromwell, to have deemed the toleration of separatists and sectaries the grand evil of his government. After the Restoration he was made one of the King's chaplains and a commissioner of the Savoy Conference to draw up the reformed liturgy. The active persecution of the Non-Conformists soon followed; and upon the passing of the act against conventicles he retired, and preached more or less openly as the act was more or less rigidly enforced. After the accession of James II, in 1685, he was arrested for some passages in his 'Commentary on the New Testament' supposed to be hostile to Episcopacy, and was tried for sedition. The violence of Jeffreys, who would hear neither the accused nor his counsel, produced a verdict of guilty on the most frivolous grounds. He was sentenced to two years' imprisonment and a heavy penalty, which, after a short confinement, the King remitted. Henceforward Baxter lived in a retired manner till his death. His wife cheerfully shared all his sufferings on the score of conscience, both in and out of prison. The character of Baxter was formed by his age; his failing was subtle and controversial theology; his excellence, practical piety. In divinity he sought to establish a resting place between strict Calvinism and high-church Arminianism, by the admission of election and the rejection of reprobation. Christ, he considered, died for some especially and for all generally; that is to say, all possess the means of salvation. A body called Baxterians long acknowledged these distinctions; and the Non-Conformist clergy, after the Revolution, were divided between this body, the pure Calvinists, and the high-church, passive-obedient Arminians. Baxter was a voluminous writer; his 'Saints' Everlasting Rest,' and the 'Call to the Unconverted,' have been extraordinarily popular. In 1830 an edition of his 'Practical Works' appeared in 23 octavo volumes. The chief authority for the facts of his life is the 'Reliquiæ Baxterianæ' of Sylvester, consisting of autobiographical matter. Consult Orme, W., 'Life and Times of Richard Baxter' (London 1830); Tulloch, J., 'English Puritanism and its Leaders' (London 3d ed. 1883).

**BAXTER, Robert Dudley,** English political economist: b. Doncaster, Yorkshire, 1827; d. May 1875. He was educated at Trinity College, Cambridge, and in 1866 became a member of the Statistical Society of London. He wrote and published 'Railway Extension and its Results' (1866); 'National Income of the United Kingdom' (1868); 'Taxation of the United Kingdom' (1869); 'English Parties and Conservatism' (1870); 'National Debts of the World' (1871), etc.

**BAXTER, Sylvester,** American journalist: b. West Yarmouth, Mass., 6 Feb. 1850. After several years on the Boston *Daily Advertiser,* beginning in 1871, was long on the staff of the Boston *Herald;* was editor of the Mexican *Financier,* of *Outing* and of *The Automobile,* the second motor-vehicle journal started in America; correspondent of Boston *Daily Advertiser* and Boston *Herald* in Germany, of Boston *Herald* and New York *Sun* in Mexico, of the *Outlook* in South America. In Boston was active in organizing the metropolitan park system and was secretary of the preliminary Metropolitan Park Commission. His interest in civic improvements led him to organize the Metropolitan Improvement League, of which he has for some years been secretary; this led to the appointment of the Metropolitan Improvements Commission by State authority and he was its secretary while for two years it studied important problems for Greater Boston. He first suggested the organization of Boston and its suburban communities into a federated metropolis as a Greater Boston, which was realized to the extent of constituting metropolitan districts for parks, sewerage and water-supply. In 1888–89, as secretary of the Hemenway Southwestern Archæological Expedition, he was associated with Frank Hamilton Cushing in his important explorations in Arizona, representing the expedition at the Americanist Congress in Berlin in 1888. In 1899 he organized an expedition to study and place on record as many of the important examples of post-Columbian architecture in Mexico as might be practicable. The result was an elaborately illustrated work entitled 'Spanish-Colonial Architecture in Mexico.' Among his other writings, beside numerous uncollected contributions to the leading magazines, including essays, sketches, short stories and poems, are 'The Cruise of a Land-Yacht' (a story of travel in Mexico, for boys); 'Berlin, a Study of Municipal Government in Germany,' 'The Old New World,' an account of the work of the Hemenway expedition's work in Arizona; 'Greater Boston,' 'Old Marblehead' and 'The Quest of the Holy Grail.' Also, in association with Charles Eliot, the greater part of the report of the Metropolitan Park Commission for Boston, made in 1893 — regarded as an exceptionally important contribution to the literature of public parks.

**BAXTERIANS.** See BAXTER, RICHARD.

**BAY,** *in architecture,* a term used to signify the magnitude of a building. Thus, if a barn consists of a floor and two heads, where they lay corn, they call it a barn of two bays. These bays are from 14 to 20 feet long, and floors from 10 to 12 broad, and usually 20 feet long, which is the breadth of the barn. It is also used to denote the divisions of a church or cathedral from floor to roof, as indicated by the pillars or arches; as, a church of eight bays.

*In botany,* the name of several trees and shrubs, as sweet bay (*Laurus nobilis*) the laurel (q.v.) of the poets, used for crowning heroes in ancient times and for church decoration at the present. It has stiff, dull-green leaves sometimes used to flavor culinary dishes. Its sweet, fragrant, aromatic, cherry-like, purple fruits are edible. This tree is widely cultivated for ornament in Europe and America, and is probably the most popular tub-plant used in open-air restaurants, esplanades, etc., on account of its ability to withstand neglect, abuse and shearing. Several hundred thousand specimens are used annually on the two continents. The bay laurel is better known as the cherry laurel (*Prunus laurocerasus*). Its leaves yield prussic acid, and were at one time extensively used

as a poison. The loblolly bay (*Gordonia lisianthus*), white bay (*Magnolia glauca*), and red bay (*Persea carolinensis*), are well-known natives of the southeastern United States. The name rose bay is given to divers evergreen rhododendrons, to oleander and sometimes to *Epilobium angustifolium*. The California bay-tree is *Umbellularia californica*. The bay-tree from which bay rum (q.v.) is distilled is *Myrcia acris*. See LAUREL; MAGNOLIA.

*In geography*, an arm of the sea, extending into the land. It is generally applied to smaller bodies of water than gulfs, of the same general geographical character, though the terms "gulf" and "bay" are used sometimes interchangeably and much to the confusion of geographical science. The word is of Saxon origin and signifies an angle. It should properly be applied only to arms of the sea which are widest at their departure from the main line of sea coast, or mouth, while "gulf" should be applied to such bodies of water as the Gulf of California, whose width is nearly the same throughout a great part of their extent.

**BAY-BIRDS,** or **BEACH-BIRDS,** a sportsmen's name, in particular use along the south shore of Long Island, N. Y., for snipe, curlews, sand-pipers, avocets and other limicoline birds that frequent the shores and bays of estuaries. Compare SHORE-BIRDS.

**BAY CITY,** Mich., city, county-seat of Bay County, is located on the south bank of the Saginaw River, four miles from its mouth on Saginaw Bay, from which it takes its name, and at the head of deep water navigation. It is 108 miles northwest of Detroit and is connected with the Michigan Central, Pere Marquette, Grand Trunk and the Detroit and Mackinac railway systems. It is the principal market town of a large area of the Saginaw Valley and "Thumb" region of the lower peninsula. the most fertile section of the State. The river is navigable for the largest lake vessels up to this point. West Bay City, directly across the river, was joined to Bay City 1 April 1905 by a special act of the legislature.

**Manufactures.**— Bay City is an important manufacturing centre, its principal industries being coal, salt, lumber, sugar, alcohol, beer, machinery and chemicals. It has the only alcohol plant in the State which produces proof alcohol from the refuse molasses, a by-product of the manufacture of beet sugar. Its chemical works is one of the largest in the world, producing alkalis, soda ash, salt, etc. There are three large beet sugar refineries, two of them being in West Bay City. Over a dozen coal mines are in operation in the county. It is the port of entry of 150,000,000 feet of lumber, imported annually from Canada, upper Michigan and the Lake Superior district, which is worked up in over a score of local planing mills, box factories and other wood-working plants. It has one machine shop which is one of the biggest in the country and its woodenware factory is the biggest in the world. The United States census of manufactures for 1914 recorded 142 industrial establishments of factory grade within the city limits, employing 4,658 persons, of whom 3,771 are wage earners, receiving annually $2,129,000 in wages. The capital invested aggregated $10,618,000, and the value of the year's output was $11,119,000: of this, $4,716,000 was the value added by manufacture.

**Trade and Commerce.**— The commerce of Bay City has changed in character during recent years. Up to 25 years ago the sawing of pine lumber was the chief industry along the Saginaw River, but because of the exhaustion of the pine forests, this industry has declined. Instead of exporting lumber, as it formerly did, its shipments amounting to 850,000,000 feet in some years, Bay City now brings in heavy shipments of mixed timbers, which is later exported in the form of manufactured articles. Fish, coal, alcohol, salt and sugar also form important items in the total shipments. The annual commerce of the city amounts to about $50,000,000.

**Railroads and Water Communication.**— Bay City is the division headquarters of the Michigan Central Railroad, the Mackinac, Bay City and Detroit, and Bay City and Jackson divisions centring here. It is also the northern terminal of the C. H. D. and Pere Marquette system, the northern terminal of the Grand Trunk and the southern terminal of the Detroit and Mackinac Railroad. It has 59 miles of street railways and is connected with Saginaw, 14 miles to the south, by electric railway. Two routes, one to Lapper, Pontiac and Detroit; and the other to Caro, Cass City, Bad Axe and Harbor Beach; also a third rail system, going from Bay City directly to Detroit without change.

**City and County Government.**— Being the county seat, Bay City contains the county courthouse and all the county offices, besides a city hall costing $200,000. The charter election is held annually on the first Monday in April. The mayor holds office for two years, the comptroller for four years and the treasurer and recorder for two years. The total expenses of the city during the year ending 1 June 1916 were $560,437. The valuation as assessed for taxation purposes was $26,355,768 in 1916. The public debt of the municipality is $1,281,500, of which $342,500 represents water bonds. The rate of taxation in 1916 was $11.60 on every $1,000 of assessed value.

**Banks and Loan Companies.**— Bay City has five banking institutions with an aggregate capital of $950,000 and a surplus of $755,000. In 1915 the undivided profits were $183,313, and the deposits amounted to $10,290,929. There are two building loan associations; the Mutual Building and Loan Association of Bay County (capital $2,000,000) and the Savings, Building and Loan Association of Bay County, capital $1,000,000).

**Education, Religion, etc.**— There are two high schools in the city and nine other school buildings, employing a superintendent, several principals and 229 teachers. The school attendance for 1916 was 13,542. A county normal training school and kindergarten schools are maintained in connection with the public school system. In addition there are the Bay City Business College, the Holy Rosary Academy, the Mercy Hospital Training School for Nurses, the Oral School for the Deaf. There are three libraries, holding a total of nearly 80,000 volumes. Religion and charity in Bay City are represented by its 36 churches and missions: 12 private and parochial schools; three

charitable institutions and three hospitals. Bay City has two daily newspapers and several weekly publications.

**History.**— The first white settler located here in 1831, being employed by the government to teach the Indians farming, in accordance with a treaty signed with the Chippewas in 1819, whereby they ceded this territory to the United States. There were two reservations, comprising about 3,000 acres within what is now the corporate limits of the municipality. A large part of this land fell into the hands of one Stephen V. R. Riley who lived with the Indians for many years and married one of their women. In 1836 his son, John Riley, sold a large tract of this land to a company of Detroit merchants, who began laying out a settlement. Six years later these pioneers acquired from the Saginaw Bay Company that territory which was then known as lower Saginaw, which considerably enlarged their property. After 1844 the settlement began to develop rapidly with the growing demand for white pine lumber, which could be had along the river above the settlement in unlimited quantities, then the richest pine forests known in the United States. In 1859 the settlement was incorporated, though it did not receive its city charter until 1865.

**Population.**— According to the Federal census figures of 1900 the population of Bay City was then 27,628. Five years later followed the consolidation with West Bay City, which then gave the municipality a population estimated at 40,000. In 1910 the census figures showed a population of 45,116.

**BAY CITY,** Tex., town and county-seat of Matagorda County, 25 miles from the Gulf coast, and 85 miles south by west of Houston, on the Colorado River, and on the Gulf, Colorado and Santa Fe, the Saint Louis, Brownsville and Mexico, and the Galveston, Harrisburg and San Antonio railroads. It is situated in a thriving agricultural region, in which the principal crops are cotton, corn, sugar cane, rice and fruit. It has cotton gins, ice-making and dairying establishments, and rice mills. Bay City was settled in 1895. Pop. 3,156.

**BAY ISLANDS,** Honduras, a group of islands in the Bay of Honduras, 150 miles southeast of Belize, known as Ruatan, Guanaja (or Bonacca), Utilla, Barbareta, Elena, Morat and the Puercos Islands. They were discovered by Columbus, 30 July 1502, and it was from Guanja that he first sighted the mainland of America. Their ownership was long a matter of dispute between Spain and England, and later between England and the republic of Honduras. In 1852 the group was declared a colony of Great Britain by royal warrant, and this action involved the United States in the dispute, that government claiming that the seizure was a violation of the Clayton-Bulwer treaty (q.v.). Negotiations dragged along slowly for several years, but finally — in 1859 — Great Britain recognized the claim of Honduras to the islands. A practical protectorate was, however, maintained by Great Britain over the group, and the inhabitants (who number about 5,000) avowed British allegiance. In 1903 Great Britain formally renounced all jurisdiction, and title to the Bay Islands is now clearly vested in Honduras.

**BAY LAGOON,** Philippines, a fresh-water lake in the northern part of Luzon. This lake is connected with Manila Bay by the Pasig River, and from its centre rises a high volcanic island. It is about 20 miles in extent from north to south, and about 47 miles from east to west. In 1899 it was made a naval headquarters for the United States.

**BAY PSALM BOOK,** the title of the first book published in the American colonies. It was printed by Stephen Daye at Cambridge in 1640, and was the product of the joint labors of Revs. Richard Mather, Thomas Wilde and John Eliot. It was revised in 1650 and was long in use in New England.

**BAY SAINT LOUIS,** Miss., city and county-seat of Hancock County, 55 miles northeast of New Orleans, on the Louisville and Nashville Railroad, and on the Jordan river. It is a favorite summer resort and a shell road along the beach is of great interest. It is the seat of Saint Stanislaus College and the Convent of Saint Joseph. The chief industries are those connected with oyster raising, fishing, fruit-growing and farming. Pop. 3,338.

**BAY SALT,** the coarse-grained salt found in salt-marshes and along ocean shores, where it is formed by the spontaneous evaporation of sea-water. The name is supposed to refer to the Bay of Biscay, on whose shores extensive deposits of «bay salt» occur.

**BAY STATE,** the popular name of Massachusetts, which prior to the adoption of the United States' Constitution had been known as the Massachusetts Bay Colony.

**BAYA,** or **BAYA SPARROW,** a sparrow-like weaver-bird (*Ploceus philippinus*), which the people of India and the Malay countries often keep about their houses, not only in cages, but as a free pet trained to do a variety of clever tricks, even to find small articles, to carry notes to certain places, and to steal ornaments from the hair of visitors. See WEAVER BIRD.

**BAYAD,** a cat fish, *Bagus bayad,* a large edible fish found in abundance in the river Nile; distinguished, however from the electric catfish of the same waters.

**BAYADERES,** bā-yą-dārz, in the East Indies, young girls, from 10 to 17 years of age, who are instructed in dancing, singing and acting little plays. They are trained under the care of women, who are experienced in all female arts, and particularly in that of pleasing. These procure from the lowest classes of the people the most beautiful girls, of seven or eight years of age, and instruct them in all the arts of their profession (especially dancing and singing), the object of which is to amuse the rich and minister to their passions. Their presence is considered necessary even at the smallest public entertainments, though they are known to be mere prostitutes. After their 17th year, when their first charms have faded, they retire to a pagoda under the protection of the Brahmins, who scruple not to pocket the gains of their prostitution. This word is from the Portuguese word *bailadeira,* from *bailar,* to dance.

**BAYAMO,** bā-yä'mō, Cuba, a town whose name is indissolubly connected with the Ten

Years' War and the revolution of 1895. Thus the Cuban national air received the name 'Bayamese Hymn.' The republican movement of 1868 originated here and in the neighboring town of Yara; and here General Garcia received the message that Lieutenant Rowan delivered to him before the War of 1898 between the United States and Spain. Bayamo was founded in the early years of the Spanish conquest. It is situated on the Rio Bayamo, an affluent of the Canto, Cuba's largest river, in the province of Oriente. It is an agricultural and commercial centre, though formerly its importance was much greater. Pop. about 4,000.

**BAYAMON,** Porto Rico, town five miles southwest of San Juan, on the American railroad. It has sugar mills, tobacco factories, watch works, iron foundries, brick and ice works, and an oil refinery. Fruit-growing and sugar cultivation are extensively carried on in the neighborhood. The town has a public school, a college and several churches. Nearby are the ruins of Pueblo Viejo (Old Town) or Caparra the earliest Spanish settlement in Porto Rico, said to have been founded by Ponce de Leon in 1509. Pop. 5,272; municipal district 29,986.

**BAYARD,** bī'ard, **George Dashiell,** American soldier: b. Seneca Falls, N. Y., 18 Dec. 1835; d. 14 Dec. 1862. Passing his boyhood in Iowa, he entered West Point, 1852, and became a cavalry lieutenant; then captain in August 1861, colonel of volunteers in September, brigadier-general the following April; and after serving in the Shenandoah and northern Virginia campaigns, was mortally wounded at Fredericksburg.

**BAYARD, James Asheton** (1st), American statesman: b. Philadelphia, 28 July 1767; d. 6 Aug. 1815. He was adopted by his uncle, Col. John (q.v.), graduated at Princeton, 1784; studied law, and settled in Wilmington, Del., permanently. In 1796 he was elected (Federalist) representative in Congress and became the leader of the party in the House, noted as a constitutional lawyer; and when the peculiar system of presidential elections at that time had tied Jefferson and Burr for the presidency, though Jefferson was the only one really voted for, Bayard threw his vote for Jefferson and elected him as the less obnoxious of the two. John Adams appointed him Minister to France, but he declined. He served in the House till 1803; in 1804 he was elected to the Senate, and held the seat till 1813, voting against the War of 1812. He was made peace commissioner in 1813 by Madison, and, declining the ministry to Russia, was one of those who concluded the Treaty of Ghent, December 1814, but died shortly after his return.

**BAYARD, James Asheton** (2d), American statesman, son of the foregoing: b. Wilmington, Del., 15 Nov. 1799; d. there, 13 June 1880. He became a lawyer of high rank in Wilmington, United States attorney for Delaware under Van Buren, and was elected United States senator, 1851, 1857 and 1863, as a Democrat; but on the last occasion the "iron-clad" oath of allegiance being required of public officers at that time, Mr. Bayard entered a protest against it as a violation of State rights, and resigned his seat at once on taking it. His successor, George R. Riddle, dying four years later after the war, he accepted an election to fill out his own unexpired term, to March 1869; during most of the time was chairman of the judiciary committee, and gained an honorable celebrity for his punctilious sense of public honor in the matter of the Credit Mobilier (q.v.). His son, Thomas F. (q.v.), was chosen to succeed him by the same legislature which had elected himself, the only instance of the kind in American history. He lived quietly at Wilmington during the remainder of his life.

**BAYARD, John,** American patriot: b. Bohemia Manor, Md., 11 Aug. 1738; d. 7 Jan. 1807 (for his descent, see BAYARD FAMILY). He was a prominent Philadelphia merchant, member of the Sons of Liberty, and later of the Provincial Congress, 1774–75, and of the Council of Safety; colonel of infantry at the battles of Brandywine, Germantown and Princeton; member of the State board of war, and speaker of its house. He furnished arms to Congress and fitted out one of the earliest efficient privateers. In 1785 he was elected to Congress. Somewhat impoverished by his sacrifices in the Revolution, he removed permanently to New Brunswick, N. J., where he was mayor, county judge and leading magnate. He was a firm Federalist, of high character.

**BAYARD, Nicholas,** American colonial official: b. Alphen, Holland, about 1644; d. New York, 1707. (See BAYARD FAMILY). He was double nephew of Peter Stuyvesant, by blood and marriage; became his private secretary and surveyor of the province, secretary of it after the English conquest, and mayor in 1685. He was commander-in-chief of the militia of the province, and one of the three resident councillors; and had to flee to Albany for his life on Leisler's usurpation after Andros' overthrow, but was made councillor anew on Leisler's downfall. On Kidd's arrest for piracy in 1699, Bayard, like all Governor Bellomont's officials, was accused of complicity, and visited London to clear himself; but the old hates of the Leisler time pursued him, and on charge of attempting to introduce popery, piracy and slavery into New York he was condemned to death for high treason. King William's death intervening, however, he was released and restored to his possessions by an order in council.

**BAYARD,** bă-yär, **Pierre Terrail** (CHEVALIER DE), French soldier: b. Château Bayard, near Grenoble, about 1475; d. 30 April 1524. He was descended from one of the most noble families in Dauphiny, and at the age of 13 became page to the Duke of Savoy, at that time an ally of France. Charles VIII, struck by his skill and grace in riding, asked that he be transferred to his service, and accordingly, as a preparation to being attached to the royal suite, young Bayard was placed in the household of Paul of Luxembourg, Comte de Ligny, where he was taught all the feats of arms and niceties of chivalry which were then held necessary to constjtute a gentleman and a soldier.

His first experience in war was in the wild and daring march of Charles VIII, with a small unsupported army, through the whole length of Italy, to invade the kingdom of Naples, which was won and lost in a few days with equal

ease; and in that campaign, he greatly distinguished himself, taking with his own hand a stand of colors in the battle of Verona. After this, while serving in an invading army in Italy, after a battle fought near Milan, in the heat of pursuit he entered that city pell-mell with the fugitives, and was made prisoner, but, in consideration of his astonishing valor, was sent back without ransom by Ludovico Sforza, together with his horse and arms. In Apulia he defeated a Spanish corps commanded by Alonzo de Soto-Mayor, who broke his parole and slandered Bayard, in return for which the latter challenged and slew him in single combat, and afterward, according to some authorities, covered the retreat of the whole French army and defended the bridge over the Liris, now the Garigliano, single-handed against half an army. For this feat he received an augmentation of his armorial bearings, a porcupine bristling with spears, with the motto *Vires agminis unus habet.*

A real type of the ideal knight-errant of romance, wherever honor was to be won or danger incurred, Bayard was there. Desperately wounded in the assault of Brescia, he was carried to the house of a nobleman who had fled, abandoning his wife and daughters to the fate which befalls women in a sacked city, and from which the wounded enemy alone preserved them. Half-recovered from his wounds, he joined Gaston de Foix before Ravenna, where with his own hand he took two Spanish standards and converted a retreat of the enemy into a rout. In the subsequent wars with Ferdinand the Catholic of Spain he displayed the same chivalric valor and the same generalship among the Pyrenees which he had displayed in his boyhood among the passes of the Alps and Apennines. In the dark days which clouded the latter years of Louis XII, when Henry VIII brought his English archers to back the German Maximilian in Flanders, and Térouanne and Tournay went down, with but feeble resistance, before the allies, Bayard was the same in adverse as he had been in prosperous fortunes. He was forced to surrender at the disgraceful battle of the Spurs, but again his glory to be taken under circumstances of such honor caused King Henry to set him at liberty with his horse and arms, unransomed. It was, however, in his noon of manhood that his glory shone the brightest. When Francis I invaded Italy after his accession to the throne of France, it was Bayard who was the precursor of his march; who made Prosper Colonna, at the very moment of his belief that he had ambushed and surprised him, his prisoner: who, in a word, paved the King's way to the magnificent battle of Marignano. In that tremendous conflict, he performed prodigies, and contributed more than any or all beside to change what once seemed a lost fight into a victory. At its close his sword conferred the accolade on the shoulder of his King, Francis I, who deemed it honor enough to take knighthood at the hand of such a paladin as Bayard. The fortunes of war, proverbially fickle and changeful, were never more so than at this epoch; and when, a short time later, Charles V invaded Champagne, his wonderful defense of the open town of Mézières alone prevented his penetrating to the heart of France, of which, by this exploit, he deserved, as he obtained, the name of savior. His next war was his last. Genoa, ever an unwilling conquest of the French arms, revolted; and, under the command of Bonnivet, Bayard was sent to reduce the city to obedience and chastise the rebels. In the first instance success attended their advance; but, after the surrender of Dodi, fortune again changed, and, foot by foot, the French were beaten out of their conquests. In retreating through the Val d'Aosta the French rear was beaten, Bonnivet was severely wounded, and the safety of the army was committed to Bayard, if he perchance might save it. In passing the river Sesia in the presence of a superior enemy, as Bayard was covering the rear and pressing hard upon the Spaniards, who were fast giving way before his impetuous charge, he was shot through the right side by a stone from an arquebus, which shattered his spine. "Jesu, my God!" he cried, "I am a dead man." And then commanding that he should be placed erect, in a sitting posture, with his back against a tree, with his face to the Spaniards, and the cross-hilt of his sword held up as a crucifix before him, he confessed his sins to his esquire, sent his adieux to his King and country, and died in the midst of weeping friends and admiring enemies. With his fall the battle was ended. The French lost everything,—standards, drums, baggage, ordnance,—and their retreat to France became a flight. But there was most grief that they had lost Bayard. His body remained in the hands of the Spaniards; but they embalmed and returned it to France unsolicited. A simple bust, with a brief and modest Latin inscription, in the church of the Minorites, in Grenoble, erected in 1823, is the only monument to one of the purest and most beautiful characters in mediæval history, the *chevalier sans peur et sans reproche.*

Bayard's life was written by Symphorien Champier in 1525, and two years later by his secretary, Jacques Joffrey, known as the "loyal servitor." Other accounts have been translated by E. Walford (London 1867).

**BAYARD, Thomas Francis,** American statesman, son of James A. (2d): b. Wilmington, Del., 29 Oct. 1828; d. 26 Sept. 1898. He was intended for a business career, and was placed in a New York house, his elder brother being designed to carry on the family succession for public life; but, the latter dying in 1848, Thomas returned to Wilmington, studied law with his father, and was admitted to the bar in 1851. He was appointed United States district attorney, but resigned the next year; removed to Philadelphia 1855 and practised law two years, then returned permanently to Wilmington. He and his father were Peace Democrats, unalterably opposed to the war, publicly denounced it, and gave no help to its prosecution. Elected to the Senate to succeed his father, he took his seat 4 March 1869, and served by successive re-elections till 1885. He was one of the leading Democratic figures, member of the finance, judiciary and other important committees, and its president *pro tempore* in 1881; was on the Electoral Commission of 1876; continued to champion the party doctrines and was one of the most prominent candidates for the presidency before both Democratic national conventions of 1880 and 1884. On 4 March 1885 he was appointed Secretary of State in the Cabinet of President Cleveland; and in this

position had his share of important and vexatious questions, such as the Bering Sea sealfishery matter, and treaties with Great Britain and Russia. He was United States Ambassador to Great Britain 1893–97, in Cleveland's second term, the first minister to hold the title of ambassador.

**BAYARD FAMILY,** a remarkable succession of American public leaders, statesmen and jurists, identified for two and a half centuries with the Middle States from New York to Maryland, and for a century and a quarter almost continuously in public service. They descended from a family of French Huguenot refugees, whose ancestor was a Paris theological professor driven to Holland to escape persecution about 1580. His son Samuel became a wealthy Amsterdam merchant and married the accomplished, energetic and capable sister (Anna) of Peter Stuyvesant, the last governor of the Dutch New Netherlands, who himself married Bayard's equally accomplished sister Judith, a great lady of her time. Samuel died in Holland; and his widow with her three sons accompanied her brother to Manhattan Island, where she took up an estate of 200 acres, including the site of the Astor Library. Of these sons, Nicholas became secretary of New Netherlands and later of English New York, mayor, commander-in-chief of the colony's militia, and practically the head of the colony —a perilous honor which twice brought him to the verge of destruction. His brother Peter, however, though not personally conspicuous, became the ancestor of the distinguished Bayards of the 18th and 19th centuries. Peter's son Samuel joined the Labadists (see LABADIE, JEAN), a sect of communists otherwise much like the Quakers, and removed to Maryland. Of his grandsons, Col. John was a leading Philadelphia merchant, patriot and soldier, representative in Congress, a county magnate in Maryland till after the Revolution, later judge and Federalist pillar; his son Samuel, lawyer, clerk of the Supreme Court, United States claim agent and judge, was one of the founders of the New York Historical Society and the American Bible Society. Col. John's twin brother, Dr. James A., was father of James A., the noted Federalist statesman of Jefferson's and Madison's time, leader of the Federalists in the House of Representatives, and the one whose vote gave the presidency to Jefferson instead of Burr, senator and peace commissioner. The two sons of the latter James A., Richard H. and James A. (2d), were both United States senators of distinction from the State of Delaware, the one a Whig and the other a Democrat — the only instance of the kind in the United States history; the former also chosen chief justice of Delaware. The son of James A. (2), Thomas F., was also senator to succeed his father; so that father, two sons and grandson represented Delaware in the Senate 47 years between 1805 and 1885. Thomas F. was further a member of the Electoral Commission of 1876, and Secretary of State under Cleveland. This unique record of distinguished public position is the more notable that it has been on the highest plane of public character as well as capacity — conspicuous for dignity, probity and scrupulous sense of those official proprieties which shun the appearance of evil and therefore bar out its reality.

**BAYAZID, or BAYEZEED,** Turkey in Asia, a town in the pashalic of, and 140 miles southeast from, Erzerum, southwest of Mount Ararat, from the base of which it is separated by a lava-covered plain 10 miles wide. It is situated on the declivity of a rugged eminence, the summit of which is fortified and surrounded by a wall and ramparts. The town is in a ruinous state; most of the houses are small and ill built, and the streets are extremely filthy. Besides the extensive palace of the Pasha, the town contains two Christian churches, three mosques and the famous monastery of Kara-Keleeseh, celebrated for its beautiful architecture and antiquity. Pop. 5,000.

**BAYAZID,** bä-yä-zēd', I and II. See BAJAZET.

**BAYBAY,** bāī'bāī, Philippines, a town of the province of Leyte, situated on the west coast, 40 miles southwest of Tanaban. Pop. 17,367.

**BAYBERRY.** See CANDLE BERRY.

**BAYER,** bī'ĕr, **Gottlieb Siegfried,** German philologist, grandson of Johann Bayer: b. Königsberg 1694; d. Saint Petersburg, 21 Feb. 1738. He displayed from his earliest childhood a singular passion for Chinese and other Eastern languages. He studied the Coptic at Berlin, under La Crosse, Arabic at Halle, under Solomon Negri, and at the same time opened a correspondence with the missionaries in India, in order to obtain more information about the Sanskrit and Hindustani. On the foundation of the academy of sciences in Saint Petersburg in 1726, he became professor of Greek and Roman antiquities. Besides his extraordinary knowledge of languages, Bayer was an eminent historical and archæological scholar. His monument is his work published in 1730, 'Museum Sinicum, in quo Sinicæ linguæ et literaturæ ratio explicatur,' containing a Chinese grammar, a grammar of the dialect of Shin-Shu, and many interesting notices on Chinese literature.

**BAYER, Johann,** German astronomer: b. Augsburg 1572; d. 1660. He is celebrated for a large work published in 1603, under the title of 'Uranometria,' and republished in 1627 under the title of 'Cœlum Stellarum Christianum,' which contains a minute description and a catalogue of the constellations. He changed the name because he had withdrawn the heathen names of the constellations, and supplied their names by others taken from the Bible, taking those of the northern constellations from the New, and those of the southern constellations from the Old Testament, and giving the names of the 12 apostles to the signs of the Zodiac. His letters were adopted by Flamsteed and others, and are now universally used, but the heathen names have kept their ground. He contributed much to the simplification of astronomical science, by avoiding the old, unintelligible nomenclature and by denoting the stars in every constellation by the letters of the Greek alphabet in their order. Bayer was also a good student of law and an able theologian. He was settled as minister over different parishes, and so zealous in his advocacy of Protestantism that he was called "Os Pro-

testantium.» The Emperor Leopold ennobled him.

**BAYER, Karl Robert Emerich von,** Austro-German novelist, who wrote under the pseudonym of ROBERT BYR: b. Bregenz, 15 April 1835; d. 1902. He was a very popular and exceedingly prolific story-teller, and his voluminous fiction largely dealing with military life, had a wide circulation. Among his best-known novels are 'The Struggle for Life'; 'Masks'; 'A Secret Dispatch'; 'The Road to Fortune'; 'Meadow Maidenhair'; 'The Ironworm.'

**BAYEUX,** bā-yė, an ancient town of France, department Calvados, 18 miles northwest of Caen. It possesses many antique houses of singular appearance, and has a beautiful cathedral dating from the 12th to the 15th century, with a crypt under the choir of several centuries earlier. Its noble portal and three towers render it especially noteworthy. The local industries include the manufacture of porcelain and lace, bonnet-making and cotton spinning. There is a public library and museum, in which one of the most interesting relics of the Middle Ages is preserved. See BAYEUX TAPESTRY.

**BAYEUX TAPESTRY,** a celebrated piece of mediæval embroidery of sewed work originally found in the cathedral of Bayeux, in the library of which town it is still preserved. The fact that such a tapestry existed was brought to light by M. Lancelot, who communicated a description of an illuminated drawing of a portion of it to the Academy of Inscriptions and Belles-lettres in 1724. This led to the discovery of the tapestry itself in 1728, whereupon various speculations arose as to its date, its origin and its purport. According to tradition it is a contemporary representation of the invasion and conquest of England by the Normans, and the discussions upon it have proved that tradition is right. It is thus not only valuable as a relic of the art of the Middle Ages, but it has also great historical value, inasmuch as it supplies several details of the great event which it portrays which are not found in the chroniclers, and also gives us an exact picture of Norman costumes and manners. It contains 1,512 figures with inscriptions in Latin giving the names and subjects. It was at one time supposed to have been worked by the needle of Matilda, Queen of William the Conqueror, assisted by her attendants, and to have been presented by Odo, bishop of Bayeux, the half-brother of William, to the church in which it was found. But later researches have led to the belief that the tapestry was made to the order of Bishop Odo; of the actual makers — certainly women — nothing is known. Whether this be so or not, it is regarded as certain that the tapestry is not later than the 11th century. During the French Revolution the tapestry was in great danger of being destroyed. In 1803 it was removed to Paris by order of Napoleon, and when he was meditating the invasion of Britain he caused it to be carried from town to town and exhibited between the acts in the theatres. It was brought back to Bayeux in 1804, when it was placed in the hôtel de ville, instead of the cathedral, its former resting-place. The length of the tapestry is 230 feet, and its height 20 inches. It is in an excellent state of preservation. There are good representations of it produced photographically. In his 'Norman Conquest' the late Professor Freeman calls it a contemporary work. Consult J. C. Bruce's 'Bayeux Tapestry' (1885) and Marignan's 'Tapisserie de Bayeux' (Paris 1902). See TAPESTRY.

**BAYLE,** bāl, Pierre, French critic and philosopher, son of a Calvinist minister: b. Carlat, near Foix (Languedoc), 1647; d. Rotterdam, 28 Dec. 1706. At the age of 19 he entered the College of Puylaurens, to finish his studies. All books were eagerly devoured by him; his taste for logic led him particularly to study religious controversies, but Amyot's 'Plutarch' and 'Montaigne' were his favorite works. In Toulouse he studied philosophy with the Jesuits. The arguments of his professors, and still more his friendly discussions with a Catholic priest who dwelt near him, confirmed his doubts of the orthodoxy of Protestantism, so that he resolved to change his religion. His family, however, tried all means to regain him, and after 17 months he returned to his old faith. To escape from the punishment of perpetual excommunication which the Roman Catholic Church then pronounced against apostates, he went to Geneva, and thence to Copet, where Count Dohna intrusted him with the education of his sons, where he studied the philosophy of Descartes. But after some years he returned to France and settled in Rouen, where he was employed in teaching. In 1675 he obtained the philosophical chair at Sedan, where he taught with distinction until the suppression of this academy in 1681. He was afterward invited to discharge the same duties at Rotterdam. The appearance of a comet in 1680 induced him to publish, in 1682, his 'Pensées Diverses sur la Comète,' in which he discussed various subjects of metaphysics, morals, theology, history and politics. It was followed by his 'Critique Générale de l'Histoire du Calvinisme de Maimbourg.' This work received with equal approbation by the Catholics and Protestants, and esteemed by Maimbourg himself, excited the jealousy of his colleague, the theologian Jerieu, whose 'Refutation du P. Maimbourg' had not succeeded, and involved Bayle in many disputes. He afterward undertook a periodical work, 'Nouvelles de la République des Lettres,' in 1684. The death of his father and of his two brothers, together with the religious persecutions in France, induced him to write his 'Commentaire Philosophique' on the words of the Gospel: "Compel them to come in"; which is not equal in merit to his other works. Bayle himself was unwilling to acknowledge it; but Jurieu, who probably recognized its author by the zeal with which toleration is defended in this work, attacked it with violence, and his influence was sufficient to lead the magistrates of Rotterdam to remove Bayle from the office in 1693. He now devoted all his attention to the composition of his 'Dictionnaire Historique et Critique,' which he published in 1695–97. This was the first work which appeared under his name. Jurieu opposed him anew, and caused the consistory, in which he had the greatest influence, to make a severe attack upon him. Bayle promised to remove everything which the consistory deemed offensive; but finding the public had other views, and preferring the satisfaction of his readers to

that of his judges, he left the work, with the exception of a few trifles, unaltered. He found two new enemies in Jacquelot and Le Clerc, who both attacked his religion: others persecuted him as the enemy of his sect and his new country. The best editions of his 'Dictionnaire Historique' are that of 1740, in four volumes folio (Amsterdam and Leyden), and that in 16 volumes, published 1820–24 at Paris. Consult Carzes, A., 'P. Bayle, sa vie, ses ideés' . . . (Paris 1905).

**BAYLEN**, bī-lān', or **BAILEN**, Spain, a town in the province of Jaen, at the foot of the Sierra Morena, 22 miles north of Jaen. It commands the road leading from Castile into Andalusia, and derives its celebrity from the events which took place in its vicinity leading to the "Capitulation of Baylen," signed 20 July 1808, when General Dupont, and about 20,000 French troops under his command, surrendered to the Spaniards on condition of their being conveyed to France by the Spanish government; but the latter stipulation was not carried into effect. The incapacity of Dupont was mainly instrumental in bringing about this result, which inspired the Spaniards with confidence and was always regarded by Napoleon as the principal source of the French disasters in the Peninsula. Galena and zinc blende are mined in the vicinity. Pop. (1910) 8,334.

**BAYLEY, James Roosevelt**, American theologian: b. New York, 23 Aug. 1814; d. Newark, N. J., 3 Oct. 1877. He studied at Trinity College, Hartford, and became a minister of the Protestant Episcopal Church; but, in 1842, was converted to the Roman Catholic faith; and, after studying at Paris and Rome, was ordained a priest in 1844. He accepted the chair of belles-lettres at Saint John's College, Fordham, and was its acting president in 1846. After serving as secretary to Archbishop Hughes, he was consecrated the 1st bishop of Newark, N. J., in 1853. In 1872 he became archbishop of Baltimore, Md. He was the founder of Seton Hall College and several other institutions. His 'Pastorals for the People' and 'History of the Catholic Church on the Island of New York,' are his chief writings.

**BAYLEY, Richard**, American physician: b. Fairfield, Conn., 1745; d. Staten Island, N. Y., 17 Aug. 1801. After studying medicine in England, chiefly in the London hospitals and under Dr. Hunter, he returned to America in 1776 as a surgeon in General Howe's army, but settled in New York the following year. He was the first professor of anatomy in Columbia College (1792) and for a time health officer of the port of New York, where his vigorous advocacy of proper quarantine laws was finally successful. A careful student of his profession, he suggested a new method of treatment for croup and maintained (1797) that in its origin yellow fever was due to local causes and was not contagious. He published 'Cases of the Angina Tracheatis, with the Mode of Cure' (1781); 'Essay on the Yellow Fever' (1797); 'Letters on Yellow Fever' (1798).

**BAYLEY, William Shirley**, American geologist: b. Baltimore, Md., 10 Nov. 1861. He was graduated at Johns Hopkins in 1883 and received the Ph.D. from the same institution in 1886. He became United States geologist of the Federal Geological Survey and professor of geology at the University of Illinois. For some time he was associate editor of the *American Naturalist*, and after its establishment in 1905 was the managing editor of *Economic Geology*. He was also professor of geology at Colby College. He is the author (with C. R. Van Hise) of the 'Report on the Geology of the Marquette Iron District of Michigan'; of the 'Report on the Geology of the Menominee District,' in the same State, and joint author of reports on other iron-bearing districts of the Lake Superior region. He is author also of 'Iron Mines and Mining in New Jersey' and of several textbooks on crystallography and mineralogy and he has been a frequent contributor to scientific journals. He is a member of the Phi Beta Kappa, Sigma Xi, Beta Theta Pi and a fellow in several scienitfic societies.

**BAYLIES**, bā'līz, **Francis**, American statesman, member of Congress from Massachusetts for several sessions: b. 1784; d. Taunton, Mass., 28 Oct. 1852. In the presidential contest which finally resulted in the election of John Q. Adams, he threw the only electoral vote for Jackson that was given from New England. He was for a short time Minister to Brazil. He published in 1828 a history of the old colony of Plymouth.

**BAYLISS, Clara Kern**, American author and journalist: b. near Kalamazoo, Mich., 5 March 1848. She published 'In Brook and Bayou' (microscopy); 'Lolami, the Little Cliff-Dweller' (1901) (republished in London); 'Lolami in a Tusayan Pueblo'; 'The Evolution of the Boy' (1905); 'Two Little Algonkin Lads' (1905); 'Old Man Coyote'; 'The Song of the Sky-People; 'Myths of the Zuani Indians'; 'Significance of the Piasau'; 'An Illinois Sun Myth'; 'Three Philippine Legends'; 'Indian Mounds of Pike County'; talks and articles on the sterilization of defectives and habitual criminals; and various other scientific archæological and educational articles.

**BAYLISS, Sir Wyke**, English artist: b. Madeley, 21 Oct. 1835; d. London, 6 April 1906. He was educated at the Royal Academy and was president of the Royal Society of British Artists from 1888. His paintings include 'La Sainte Chapelle' (1865); 'Saint Mark's, Venice' (1880); 'Saint Peter's, Rome' (1888); 'The Cathedral, Amiens (1900); 'The Golden Duomo, Pisa' (1892), etc. His publications include 'The Witness of Art' (1876); 'The Enchanted Island' (1888); 'The Likeness of Christ Rex Regum' (1898); 'Five Great Painters of the Victorian Era' (1892).

**BAYLOR, Frances Courtenay.** See BARNUM, F. C. B.

**BAYLOR, Robert Emmett Bledsoe**, American lawyer: b. Lincoln County, Ky., 10 May 1793; d. Gay Hill, Tex., 6 Jan. 1874. In the War of 1812 he served under Colonel Boswell and took part in the engagement near Fort Meigs. Admitted to the bar in Kentucky, he later removed to Alamaba (1820), acquired a large practice and became prominent in politics, being a representative in Congress, 1829–31. Later he emigrated to Texas, then a republic, and was a district judge for 25 years. A loyal member of the Baptist denomination, he

gave largely in money and land to establishing one of its colleges at Independence (1845) and in recognition of his munificence it was named Baylor University (q.v.).

**BAYLOR UNIVERSITY**, a coeducational institution in Waco, Tex., controlled by the Baptist Church. It was founded in 1845 on a charter granted by the republic of Texas and named for Robert E. Baylor (q.v.). Its first location was in Independence, Tex.; it was provided with a university course in 1851; in 1861 President Burleson (who had been its head for 10 years) and the entire faculty resigned and organized a university in Waco, Tex., giving it the name of that city. The two institutions were consolidated in 1868, the earlier one being removed to Waco and President Burleson continuing at the head of the institution. At the close of 1915 the university reported: Professors and instructors, 84; students, 1,209; volumes in the library, 28,570; grounds and buildings valued at $800,000; productive funds, $263,124; income, $125,461. The university maintains an undergraduate college, a preparatory school, known as Baylor Academy, a department of fine arts and a department of medicine and pharmacy at Dallas, Tex.

**BAYLY, Ada Ellen**, a popular English novelist, best known as EDNA LYALL: b. Brighton, 25 March 1859; d. Eastbourne, 8 Feb. 1903. She has written 'Won by Waiting' (1879); 'Donovan' (1882); 'We Two' (1884); 'In the Golden Days' (1885); 'Knight Errant' (1887); 'Autobiography of a Slander' (1887); 'Derrick Vaughan, Novelist' (1889); 'A Hardy Norseman' (1889); 'Doreen' (1894); 'How the Children Raised the Wind' (1895); 'Autobiography of a Truth' (1896); 'Wayfaring Men' (1897); 'Hope the Hermit' (1898); 'In Spite of All' (1901); 'The Hinderers' (1902), etc. Although her novels are decidedly romantic, their aim is to depict the development of character.

**BAYLY, Lewis**, Welsh prelate: d. 26 Oct. 1631. He was the author of 'The Practice of Piety,' a very popular religious book which had great influence on Bunyan. It not only passed through many English editions, but was also translated into the Indian language by John Eliot, and was used by him in his work among the Indians.

**BAYLY, Thomas Haynes**, English songwriter and author: b. Bath, England, 13 Oct. 1797; d. London, 22 April 1839. He began the study of law under his father, and later went to Saint Mary Hall, Oxford, in order to prepare for the Church; but abandoned both and devoted himself to literature. He gained great popularity with some songs, and several dramas and novels by him also hit the public taste. With Henry Bishop he published 'Melodies of Various Nations.' Among his songs some of the best-known are 'Isle of Beauty'; 'The Soldier's Tear'; 'We Met — 'twas in a Crowd'; and 'She Wore a Wreath of Roses.' His best play is 'Perfection'; among his novels are 'The Aylmers'; and 'A Legend of Killarney.' 'Loves of the Butterflies'; and 'Songs of the Old Château,' are volumes of songs and ballads; and his other works include 'Kindness in Women,' a collection of tales; 'Parliamentary Letters and other Poems,' and 'Rough Sketches of Bath.'

**BAYLY, Thomas Henry**, American statesman: b. Accomac County, Va., 1810; d. 22 June 1856. He was admitted to the bar in 1830, and was for several years a member of the general assembly of his State. In 1842 he was elected judge of the Circuit Superior Court of law, an office which he resigned in 1844, when elected a representative in the national Congress; and by successive re-elections he held the latter position till his death. As chairman of the committee on ways and means, he was the leader of the House during many sessions, and was highly respected by men of all parties, as well for his urbanity and dignity, as for his ability. The family home in which he died was established by his ancestors from England in 1666, and it is remarkable that he held just the same public offices that had been filled by his father.

**BAYNE, Peter**, Scottish writer: b. Fodderty, Scotland, 19 Oct. 1830; d. London, 10 Feb. 1896. He studied theology at Edinburgh and philosophy under Sir William Hamilton, and was editor successively of the Glasgow *Commonwealth;* Edinburgh *Witness;* London *Dial;* and *Weekly Review;* and associate editor of the *Christian World*. He was author of 'The Christian Life: Social and Individual' (1855); 'Essays Biographical, Critical, etc.' (1859); 'Life and Letters of Hugh Miller' (1871); 'Testimony of Christ to Christianity' (1862); 'The Days of Jezebel,' a drama (1872); 'The Chief Actors in the Puritan Revolution' (1878); 'Life of Martin Luther' (1887).

**BAYNES, Thomas Spencer**, English philosopher: b. Wellington, Somersetshire, March 1823; d. 29 May 1887. He was educated at Bath, Bristol College, and the University of Edinburgh, where he became (1851–55) assistant to Sir William Hamilton, then professor of logic. In 1857 he was appointed examiner in logic and mental philosophy in the University of London; became (1857–64) assistant editor of the *Daily News*, to which he contributed many noteworthy articles on the American Civil War, and at this time wrote for several literary journals, such as the *Athenæum* and the *Literary Gazette*. In 1864 he was elected professor of logic, rhetoric and metaphysics in the University of Saint Andrews. Besides his contributions to reviews he published a translation of the 'Port Royal Logic,' with notes (1851); and an 'Essay on the New Analytic of Logical Forms' (1852). He was appointed editor of the ninth edition of the 'Encyclopædia Britannica' (being subsequently assisted by Prof. Robertson Smith).

**BAYOMBONG**, bī-yŏm-bŏng', Philippines, the capital of the province of Nueva Vizcaya, Luzon, situated on the Magat River. It is the centre of a fertile rice and tobacco region. Pop. 3,691.

**BAYONET.** A short sword or sharp-pointed weapon (usually triangular in cross-section) fitted on to the muzzle of a musket or similar weapon, so as to give the soldier increased means of offense and defense. The name is said to be derived from the town of Bayonne in France, where, it is stated, it was first invented in 1640. The first regiment which

appears to have had bayonets attached to their muskets was the Grenadier Guards, as far back as the year 1693. It is stated by Macaulay that in consequence of the awkward mode of attaching the bayonet the English lost the battle of Killiecrankie, as the Highlanders were upon the troops before they could convert their fire-locks into pikes. The bayonets then used were called *bayonets-à-manche*, and had handles which fitted into the muzzles of the guns, but at a later date were introduced the *bayonets-à-douille* or socket-bayonets having sockets which enabled the bayonets so to be used as not to interrupt the firing. The use of pikes went out when that of bayonets came in. It seems very probable that the first bayonet was a dagger, which the musketeer stuck by means of its handle into the muzzle of his weapon to shield him from a cavalry charge, and that the usefulness of the contrivance suggested a permanent arrangement.

Bayonets are now made with great rapidity and the process of manufacture is very simple. Two pieces of metal are first selected, viz., a piece of the best cast steel, 7 inches long by ¾ inch square, and a piece of the best wrought-iron rod, 4 inches long by about 1 inch in thickness. The steel is to form the blade, and the iron the socket-handle. The steel, being properly shaped at one end, is joined to the iron by welding. A forging machine is next employed to give a rough outline of the required shape. Then comes the action of a swaging-machine, with dies which come down upon the metal in great force and counter-dies beneath the metal. The metal is then annealed; turned in a cutting-machine to remove a wire-edge thrown up in the act of stamping; cut to a proper length, and the socket-end made square; drilled and bored, to make the socket hollow; shaped and furrowed along the blade; bent at the neck; hardened and tempered; and finished by a numerous train of minor operations. The bayonet-charge is now one of the most terrible manœuvers of trained infantry, in which each nation fancies itself to excel all others.

In close-quarter engagements there is no weapon more formidable; from its length and weight the thrust of the bayonet gives a terrible wound, and its force is such that there is great difficulty in parrying the attack. Like other small-arms, it is most serviceable when handled on scientific principles; and the art of using it to advantage is so simple as to be very easily acquired. while the exercise, from the weight of the rifle, admirably aids in developing the muscles of all parts of the body.

A sword-bayonet is quite widely used, especially for the short rifles of the light infantry, the carbines of the artillery, etc. It is a compound of the sword and the bayonet, as its name indicates, having a sword-like blade with only one edge, and being capable of being fastened to the muzzle of the gun like the bayonet. Opinions as to the present utility of bayonets differ widely, many authorities considering them of little importance. While the result of a battle is often determined by the employment of smokeless powder and long-range and rapid-firing rifles in surprises and night attacks, the bayonet may be used to advantage, as was frequently proved in the Boer War.

While the infantry soldier relies mainly on fire action to disable the enemy, yet he must be instructed in the use of the rifle and bayonet in hand-to-hand encounters, the object of all such instruction being to teach the soldier how to make effective use of the rifle and bayonet in personal combat; to make him quick and proficient in handling the rifle; to give him an accurate eye and a steady hand, and to give him confidence in the bayonet in offense and defense.

**BAYONNE**, bā-yŏn, France, a cathedral town and a fortress of the first class in the department of the Basses-Pyrénées. It is situated at the confluence of the Nive and the Adour, about four miles from the Bay of Biscay. These rivers form a harbor capable of admitting vessels of considerable size. The harbor is safe and commodious, and has three lighthouses at its entrance. They divide the town into three parts, namely, Great Bayonne on the left bank of the Nive, Little Bayonne between the rivers and Saint Esprit on the right bank of the Adour. A citadel, built by Vauban, on the summit of an eminence in the suburb, commands the harbor and the city. The cathedral is a beautiful building dating from 1213, restored in the 19th century and furnished with two towers. The arsenal, one of the finest in France, and the mint are among the other buildings of Bayonne. The city has a considerable trade with Spain, Portugal and South America, and masts and other timber for shipbuilding, from the Pyrenees, are exported to Brest and other ports of France. Ships are built, and woolens, chocolate, soap, brandy, leather, linen goods, glass, etc., are manufactured. Other exports include wine, tars and resins, minerals, grain, chocolate and the famous Bayonne hams. Among the lower class the ancient Biscayan or Basque language is spoken. Catherine de Medici had an important interview with the Duke of Alva in Bayonne, June 1565, at which it is said the massacre of Saint Bartholomew was arranged. The meeting of Napoleon with the King of Spain, Charles IV, and the Prince of the Asturias, took place here in May 1808, when the latter transferred their rights to the Spanish territories in Europe and India to the French Emperor. Pop. 27,886.

**BAYONNE**, bā-yŏn′, N. J., city in Hudson County on New York harbor, the Kill von Kull, and Newark Bay, the Morris Canal and the Central Railroad of New Jersey, seven miles southwest of New York. It was formed by the union of a number of former villages and early Dutch settlements (Pamrapo, Bayonne, Centerville and Bergen Point), and is principally engaged in coal shipping and the refining and exporting of petroleum, the works for the latter being connected by pipe lines with New York, Philadelphia, Baltimore and other cities. Other industries are the manufacture of motor boats, wire, silk, chemicals, ammonia and colors ready mixed paints, electrical and gas engines, structural iron, silk goods, insulated wire, boiler factories and large smelting and refining works. The United States census of manufactures for 1914 recorded 121 industrial establishments of factory grade, employing 11,899 persons, of whom 10,149 were wage earners, receiving $6,771,000 annually in wages. The capital invested aggregated $92,-

653,000, and the value of the year's output was $98,208,000; of this, $20,513,000 was the value added by manufacture. The city has adopted the commission form of government. The residential part is very attractive, containing mansions of many New York business men, and the fine Hudson County Boulevard terminates at Bayonne. The city has an important public library, recreation grounds and bathing establishments. Pop. 65,000.

**BAYONNE, Treaty of,** a treaty of peace agreed to 4 May 1808, and signed on the next day, between Napoleon and Charles IV, King of Spain. The latter resigned his kingdom, and Napoleon engaged to maintain its integrity, and to preserve the Roman Catholic religion. His son, Ferdinand VII, confirmed the cession 10 May.

**BAYONNE CONFERENCE,** a conference held at Bayonne, June 1565, between Charles IX of France, the Queen mother, Catherine de Medici, Elizabeth, Queen of Spain, and the Duke of Alva, envoy of Philip II, to arrange plans for the repression of the Huguenots.

**BAYONNE DECREE.** On 17 April 1808, Napoleon directed the capture and sale of all vessels entering the ports of Spain, France, Italy and the Hanse towns, under the American flag, and by the provisions of this declaration, known as the Bayonne Decree, France is supposed to have confiscated more than 300 American vessels. The decree was issued ostensibly with the view of helping the United States to enforce the embargo of 1807 and on the presumption that all such vessels must be sailing under false colors and thus indirectly benefiting the English cause. See CONTINENTAL SYSTEM.

**BAYOU,** bī'oo, probably a corruption of the French word *boyau,* a "gut" or "channel." Its strict signification is a stream which is not fed by springs, but flows from some other stream or from a lake; but it is not infrequently used in America as synonymous with "creek." The term is very little employed except in the States of Louisiana, Texas and Arkansas.

**BAYOU STATE,** the name often given to the State of Mississippi.

**BAYREUTH,** bī-roit, or **BAIREUTH,** Bavaria, on the Red Main, 41 miles northeast of Nuremberg, capital city of the government district of Upper Franconia. The principal edifices are the old palace now occupied by public offices, the new palace, with garden and park open to the public; the opera house, a gymnasium, and the national theatre, constructed after the design of the composer Wagner. Among the interesting private houses are the Villa Wahnfried, the former residence of Richard Wagner, who is buried in its grounds, and the house of Jean Paul Richter. In the Central Cemetery are the graves of Jean Paul Richter and the composer Franz Liszt. Baireuth has numerous educational and charitable institutions. There are manufactures of cotton and woolen goods, sewing machines, leather, earthenware and agricultural and musical instruments. There are also breweries, distilleries and brick-kilns. This town is popularly known as the mecca of the Wagnerites. In 1872, partly from funds collected from patrons and partly by the organization of the so-called Wagner societies, there was begun the erection of a theatre for the production of Wagner's works. It was opened in 1876 with a grand performance of his 'Ring of the Nibelungen,' and since then music lovers have been attracted to Baireuth from all over the world. The theatre occupies a site on a hill overlooking the town and is reached by a broad avenue of shade trees. In connection with the theatre is a school for the training of voices to participate in the Wagner festivals. Baireuth fell to the Burgrave of Nuremberg in 1248, and after many vicissitudes was ceded to Bavaria in 1810. Pop. (1910) 34,547.

**BAYRHOFFER,** bīr'hōf-fĕr, **Karl Theodor,** German Hegelian philosopher and radical politician: b. Marburg 1812; d. Jordan, Wis., 3 Feb. 1888. He was professor of philosophy at Marburg, taking the chair in 1845, but in 1846 his radical views caused his expulsion. During the brief rule of liberalism in Hesse he was chosen president of the chamber; but, in 1853, was forced to flee to the United States. Among other works he wrote 'On Catholicism in Germany'; 'Idea and History of Philosophy'; 'Fundamental Problems of Metaphysics,' etc.

**BAZA,** bā'thą, Spain (ancient BASTI), a city in the province of and 53 miles east-northeast from Granada, in a valley north of the Sierra Baza. The environs yield wine and hemp, grain, fruit, oil; sheep, cattle and mules are reared; and there are some manufactures, chiefly of leather pottery, sombreros, and flour and oil mills. Baza is famed in early Spanish history, more especially in that of Granada. In 1489 it was taken from the Moors by the Spaniards, after a siege of nearly seven months. In 1810 the French, under Marshal Soult, here defeated the Spaniards under Generals Blake and Freire. Pop. 15,964.

**BAZAINE,** bą-zān, **Achille François,** French military officer: b. Versailles, 13 Feb. 1811; d. 23 Sept. 1888. He entered the army in 1831, served in Algeria, in Spain against the Carlists and in the Crimean War. He joined the Mexican expedition under General Forey, was present at the siege of Puebla, and shortly afterward was the first to enter the City of Mexico. In 1863 he obtained the chief command, was made a marshal of France in 1864, and remained in Mexico with the Emperor Maximilian. When Napoleon III abandoned the Emperor, Bazaine tried vainly to persuade him to abdicate the throne voluntarily. In 1870, at the outbreak of the Franco-Prussian War, he commanded the 3d army corps, and capitulated at Metz, after a seven weeks' siege, with an army of 170,000 men. For this act he was tried by court-martial in 1871, found guilty of treason and condemned to death. This sentence was commuted to 20 years' seclusion in the Isle of Saint Marguerite, off the south coast of France, from which he escaped and retired to Spain, where an attempt was made to assassinate him. His widow, who had clung faithfully to him in his adversity and had plotted successfully for his escape, died in the City of Mexico, 8 Jan. 1900. She was a woman of aristocratic birth and much beauty. See La Brugère, 'L'affaire Bazaine' (1874); L'Hérisson, 'La légende de Metz' (1888).

**BAZALGETTE**, băz-ăl-jet', Sir **Joseph William**, English civil engineer: b. Enfield, England, 1819; d. London, 1 March 1891. As chief engineer of the London board of works he built many miles of sewers and embankments, three of the Thames bridges and the well-known Thames embankments. He was an expert authority on questions of municipal engineering.

**BAZAN**, bą-zäń, **Don César de.** See Don César de Bazan.

**BAZAN**, bą-thäń, **Emilia Pardo.** See Pardo Bazan, Emilia.

**BAZANCOURT**, bą-zäń-koor, **César** (Baron de), French military historian: b. Paris 1810; d. there, 25 Jan. 1865. He was official historiographer to Napoleon III, whom he accompanied in several campaigns. He published 'L'expédition de Crimée jusqu'à la prise de Sebastopol' (1856); 'La campagne d'Italie de 1859'; 'Les expéditions de Chine et Cochinchine' (1861–62); 'Histoire de Sicile sous la domination des Normands' (1846); and the novels 'Georges la Montagnard' (1851); 'Noblesse oblige' (1851); 'La Princesse Pallianci' (1852).

**BAZANCOURT, Jean Baptiste Marin Antoine Lecat de**, French general: b. Val-de-Molle (Oise), 19 March 1767; d. 17 Jan. 1830. He took an active part in the Italian campaigns; distinguished himself and was wounded at the siege of Saint Jean d'Acre; fought in the battle of Austerlitz, and was a member of the court-martial which, on 21 March 1804, pronounced the sentence of death upon the Duc d'Enghien. In 1806 he was appointed commander of the Legion of Honor, and in 1808 promoted to the rank of brigadier-general, while in the same year he was created baron of the empire, and went as commander to Hamburg with a mission connected with the continental blockade. He withdrew from service in 1815.

**BAZAR**, or **BAZAAR**, a market-place in the East, the word being Arabic in origin. Some bazars are open, some covered over. As the Orientals live almost entirely out of doors, the bazars of populous cities, besides their mercantile importance, are of consequence places of social intercourse. In the Oriental tales,—for instance, in the 'Arabian Nights,'—the bazars occupy a very conspicuous place. The word bazar has also been imported into Europe, where it is used in much the same sense as in the East. Among English-speaking people it is frequently applied to a temporary sale of fancy goods contributed gratuitously and sold to raise a special fund.

**BAZARD**, bą-zăr, **Amand**, French socialist: b. Paris 1791; d. 29 July 1832. After the Restoration he helped to found the Revolutionary Society of the "Amis de la Vérité," and in 1820 an association of French Carbonari. In 1825, impressed with the necessity of a total reconstruction of society, he attached himself to the school of Saint-Simon, and became one of the editors of a journal termed *Le Producteur*. In 1828 he delivered at Paris a series of lectures, the substance of which was published in the 'Exposition de la doctrine de Saint-Simon' (1828–30), of which the first part was by Bazard, the second being chiefly the composition of Enfantin. He and Enfantin became the acknowledged leaders of the school. After the July Revolution (1830), a larger scope was afforded to the Saint-Simonians. The masses were attracted by the doctrine that all social institutions ought to have for their end the moral, intellectual and physical amelioration of the poor. In a short time, Bazard and his friends had created a new society, living in the midst of the old, with peculiar laws, manners and doctrines. But Bazard's connection with it was of short duration. He differed from Enfantin on the doctrine of the emancipation of women, and in 1831 seceded in disgust. His efforts to found a school of his own proved unsuccessful, and, during a heated discussion with his former friend, Enfantin, he was struck with apoplexy, from the effects of which he died.

**BAZAS**, town in the department of Gironde, France, on the Beuve, about 33 miles southeast of Bordeaux, with which it is connected by rail. It overlooks the river from a rocky eminence and was once a well fortified town, the remains of its walls, built in the 13th century, being still visible. In the times of the Romans it was known as Castrum Vasatum. Among its attractions are a cathedral of Gothic architecture and an old monastery now used as a college. Until 1792 it was the seat of a bishopric. Leather and woolen goods and hats are manufactured here. Pop. (1911) 4,704.

**BAZIGARS**, bă-zę-gärz', a tribe of nomadic Indians dispersed throughout the whole of Hindustan. They are divided into seven castes; their chief occupation is that of jugglers, acrobats and tumblers, in which both males and females are equally skilful. They present many features analogous to the gypsies of Europe.

**BAZIN, René François**, French novelist: b. Angers, 26 Dec. 1853. Graduating from a law college in Paris, he became, in 1878, professor of law at the university in his native city. In 1903 he was elected a member of the French Academy. Reading the works of Capt. Mayne Reid influenced him to become a writer. He ranks as one of the foremost of present-day French novelists, but he has also written many books of travel and observation, one of which, 'The Italians of To-day' (1904), has been widely read among Americans. His novels are 'Stephanette' (1884); 'Les Noellet' (1890); 'Madame Corentin' (1893); 'Humble amour' (1894); 'De toute son âme' (1897); 'La terre qui meurt' (1899); 'Les Oberlé' (1901); 'Donatienne' (1903); 'L'âme alsacienne' (1903); 'L'isolée' (1905); 'Le blé qui lève' (1907); 'Le mariage de Mademoiselle Gimel' (1908; English translation 1913). Among his works of non-fiction are 'À l'aventure' (1891); 'Sicile' (1892); 'Terre d'Espagne' (1896); 'Croquis de France et d'Orient' (1901); 'Nord-Sud Amérique, Angleterre, Corse, Spitzberg' (1913).

**BAZOCHE**, ba-zō'sch, or **BASOCHE** (corruption of Basilica), a brotherhood formed by the clerks of the Parliament of Paris at the time it ceased to be the Grand Council of the French king. The government of the order was vested in a chief known as "le roi de la Bizoche," who had his retinue after the manner of real kings and maintained a mock court. The organization was divided into chapters, at

the head of each being a captain, who, together with the members of his division, wore a special uniform to distinguish them from the members of the other chapters. Such chapters were also found in other parts of France where local parliaments were maintained. The order was in existence as early as 1303, for in that year King Philip conferred on it the privilege of holding an annual festival at which were presented dramatic performances in which current events were freely satirized. In 1500 the order was granted the permission to hold these performances in the salon of the Royal Palace. The most popular of these farces was a mock trial called "Pathelin," which was first presented in 1480. These crude performances had a powerful influence in the latter development of the French stage, the comedies of Molière being founded on them. On the outbreak of the first agitations that finally had their climax in the great French Revolution, the guild took an active part in politics. It was finally disbanded by the general decree of 13 Feb. 1791. Consult Fabre's 'Etudes historiques sur les Bazoches' (2d ed., Paris 1875).

**BAZTAN,** băz-tän', or **BASTAN,** a Pyrenean valley in the extreme north of Spain, having a length of nine miles and an average breadth of four miles. It is inhabited by about 8,000 people, who form, under Spanish supervision, a diminutive republic, at the head of which is the mayor of Elizondo. The citizens of this republic rank with the Spanish nobility and hold special privileges, which were granted them for former services to the Spanish Crown.

**BAZZINI,** bat-sē-nē, **Antonio,** Italian musician and composer: b. Brescia 1818; d. 1897. Already at the age of 15 he was an accomplished soloist on the violin, and two years later, at the age of 17, he was director of the choir in one of the largest churches of his native city. Beginning in 1843, he studied for four years at Leipzig, though he had already, two years previously, made a concert tour, taking in Germany, France and England. During this period he made the personal acquaintance of Paganini and was deeply influenced by him. Later he devoted himself more to composition, becoming, first, professor of composition in the Conservatory of Milan, then director. Among his chief compositions are an opera, 'Turandot' (produced in 1867), a symphonic poem, 'Francesca da Rimini' (1890), and five string quartets.

**BDELLIUM,** dĕl'lĭ-ŭm, an aromatic gum found in different countries, but brought chiefly from Arabia and India. It resembles myrrh in its appearance, and is hence often fraudulently substituted for it. It is obtained from *Commiphora mokul* and *C. agallocha.* It has a sweet smell but bitter taste, softens readily between the fingers before the fire and dissolves partially in alcohol and still more in water. A better variety of bdellium is that produced by the west African *C. africana;* it is used in plasters. The bdellium mentioned in Scripture, in Hebrew *bedholachh,* is rendered in the Septuagint of Gen. ii, 12, anthrax (literally, "burning coal") — the carbuncle, ruby and garnet (Liddell and Scott), the red sapphire (Dana); while in Num. xi, 7, it is translated *krystallos* — rock crystal. Some modern writers, following the Septuagint translation, make it a minerals, as are the gold and onyx stone with which it is associated in Gen. ii, 12, while the Rabbins Bochart and Gesenius consider that it was a pearl or pearls.

**BEACH, Alfred Ely:** b. Springfield, Mass., 1 Sept. 1826; d. 1 Jan. 1896. He was a son of Moses Yale Beach, and after receiving an education in the Monson Academy at Monson, Mass., he was associated with his father in the publishing business of the New York *Sun.* In 1846 he formed a partnership with his life-long friend and schoolmate, Mr. Orson D. Munn, of Monson, Mass., and purchased the *Scientific American* from Rufus Porter, combining with the business of publishing that of soliciting patents. In 1847 he invented a typewriter which printed raised letters on a strip of paper, intended for the blind, and was awarded a gold medal at the Crystal Palace Exposition. This machine is noteworthy as the first to cover a principle developed into the modern typewriter, viz., a basket of levers arranged in a circle, and delivering their impression on a common centre. In 1867 he constructed a suspended tube eight feet in diameter by 100 feet long, through which passengers were carried back and forth in a tightly fitting car, as the air was exhausted from or forced into the tube by a rotating fan. He also devised means for transporting letters through a tube under the street, by which they could be conveyed directly to the post-office when dropped into a street letter-box.

His most important invention,— a shield for tunneling under streets or rivers without disturbing the surface,— was made in 1868, and became known as the Beach shield. It resembled a gigantic hogshead with the heads removed, the front circular edge being sharp, and the rear end having a thin iron hood. This cylinder is propelled slowly forward through the earth by several hydraulic rams forced out from the rear of the shield, by the operation of a single hydraulic pump, against the completed tunnel in the rear. By this method only the amount of earth to be occupied by the tunnel is excavated. After the shield is forced forward the hydraulic rams are pushed back, and in the thin hood at the rear a new section of the tunnel is constructed. In 1869, by means of such a shield, Mr. Beach constructed a tunnel nine feet in diameter under Broadway, New York, from the corner of Warren street south to a point opposite the lower side of Murray street, and in 1870 a car was sent to and fro on tracks through this tunnel by pneumatic power — the first underground transit in New York. From 1872 to 1876 Mr. Beach edited an annual publication entitled *Science Record,* published by the *Scientific American.* In 1876 he originated the *Scientific American Supplement,* devoted to the publication of scientific matters *in extenso,* taken largely from exchanges and foreign publications. He was also instrumental in beginning the publication of the *Scientific American Builders' Monthly.*

**BEACH, Charles Fisk,** American clergyman: b. Hunter, N. Y., 5 Sept. 1827; d. 25 May 1908. He studied theology at Auburn Theological Seminary, N. Y., was pastor of Presbyterian churches 1854–73, editor and publisher *National Presbyterian* 1873–95. He studied

law and was admitted to the bar 1896. He published 'The Muzzled Ox' (1866); 'The Christian Worker' (1869); 'Commentaries on the Law of Trusts and Trustees' (1897); 'Monopolies and Industrial Trusts' (1898).

**BEACH, Charles Fisk, Jr.,** American legal writer: b. Kentucky, 4 Feb. 1854. He was called to the bar in New York 1881, and practised in that city till 1896, but since the last named date has practised in London and Paris. His especial field is railway and corporation law, and he has published treatises on 'Receivers' (1887); 'Wills' (1888); 'Railways' (1890); 'Private Corporations' (1891); 'Modern Equity Jurisprudence' (1892); 'Public Corporations' (1893); 'Modern Equity Practice' (1894); 'Injunctions' (1895); 'Insurance' (1895); 'Contracts' (1897); 'Contributory Negligence' (3d ed., 1899).

**BEACH, David Nelson,** American clergyman: b. Orange, N. J., 30 Nov. 1848; graduated from Yale College 1872, and from Yale Divinity School 1876. Entering the Congregational ministry he was successively pastor of Congregational churches in Westerly, R. I., 1876–79; Wakefield, Mass., 1879–84; Cambridge, Mass., 1884–96; Minneapolis (1896–98); Denver from 1899. He was active in banishing the saloon from Cambridge and was prominent in advocating a modified Norwegian liquor system in Massachusetts. He has written 'Plain Words on Our Lord's Work' (1886); 'The Newer Religious Thinking' (1893); 'The Intent of Jesus' (1896); 'Statement of Belief' (1897); all advocating church unity and rational theology.

**BEACH, Frederick Converse,** American editor: b. New York, 27 March 1848. In 1855 he removed to Stratford, Conn., where he received an education at public and private schools. In 1864, as a pastime, he began the practice of photography with his father, Alfred Ely Beach (q.v.), and has continued his interest in the art ever since. In 1866 he suggested to the commissioner of patents the utility and practicability of photo-lithographing the United States patents, a plan which was subsequently adopted. In 1868 he was graduated from the Sheffield Scientific School of Yale University with the degree of Ph.B. In 1869, after engaging in the business of patent solicitor at Washington, D. C., he returned to New York and was appointed assistant superintendent of the construction of the Beach pneumatic tunnel under Broadway, New York (see BEACH, ALFRED ELY). Subsequently he took up the manufacture of electrical instruments. In 1877 he entered the office of the *Scientific American*, assisting his father, and after the latter's demise he became one of the editors. He has made extensive experiments in photography and written much relating to the art. In 1884 he founded the Society of Amateur Photographers of New York, the name of which was afterward changed to the Camera Club of New York. In 1885 he assisted in organizing the American Lantern Slide Interchange. In 1889 he was instrumental in establishing a monthly magazine entitled *The American Amateur Photographer* (now *American Photography*). In 1902 he was appointed editor-in-chief of the 'Encyclopedia Americana,' the first edition of which was published in 1903.

**BEACH, Mrs. H. H. A.** (AMY MARCY CHENEY), American composer: b. Henniker, N. H., 5 Sept. 1867. She studied music from childhood, and made her first appearance in public as a pianist at the Boston Music Hall when 16 years old. She has composed a mass in E flat; 'The Rose of Avontown,' a cantata for female voices; a Gaelic symphony; a symphony, anthems, songs and compositions for various musical instruments and full orchestras.

**BEACH, Harlan Page,** American missionary: b. South Orange, N. J., 4 April 1854. He was graduated at Yale in 1878 and at Andover Theological Seminary in 1883. During 1878–80 he taught at Phillips Andover Academy; in 1883 he went to China as a missionary, remaining there six years. Soon after his return he became head of the School for Christian Workers, Springfield, Mass., and in 1895 educational secretary of the Student Volunteer Movement for Foreign Missions. Since 1906 he has been professor of theory and practice of missions at Yale University. He has contributed extensively to various periodicals, is advisory editor of *The Missionary Review of the World* and furnishes the annotations for American missionary literature to the *International Review of Missions*, Edinburgh. His publications include 'Dawn on the Hills of T'ang' (1898); 'Knights of the Labarum; or Four Typical Missionaries' (1896); 'New Testament Studies in Missions' (1899); 'Geography and Atlas of Protestant Missions' (1902); 'Princely Men in the Heavenly Kingdom' (1903); 'India and Christian Opportunity' (1904).

**BEACH, Miles,** American jurist: b. 1840; d. 1902. He was graduated at Union College, Schenectady, studied law and practised in Troy. When 27 years of age he removed to New York and in 1879 was elected judge of the Court of Common Pleas, holding that office till 1894, when he passed to the bench of the Supreme Court of the State.

**BEACH, Moses Sperry,** American inventor and editor: b. Springfield, Mass., 5 Oct. 1822; d. 25 July 1892. He was the son of Moses Yale Beach (q.v.), and in 1845 he married Chloe Buckingham, of Waterbury, Conn., and in the same year became joint proprietor, with George Roberts, of the Boston *Daily Times*. Soon after this he became associated with his father and brother in the publication of the New York *Sun*, and acquired the sole ownership of it in 1851, transferring it in 1868 to Charles A. Dana. It was while he was conducting the publication of the *Sun* that he invented and made several important improvements in printing-presses, which were patented, a few now being in use. Among them were the feeding of roll paper to the press instead of flat sheets, apparatus for wetting the paper prior to printing and another improvement for cutting off sheets after printing; also a method of adapting newspaper presses to print both sides of the sheet at the same time, as is now customary. In 1867 he visited the Holy Land, on the steamer *Quaker City*, in company with the distinguished party of which "Mark Twain" was a member, and whose experiences formed the basis of Twain's book, 'The Innocents Abroad.' Mr. Beach brought back an olive-

tree from the Mount of Olives, from which was made a pulpit stand that is at present in Plymouth Church, Brooklyn.

**BEACH, Moses Yale,** American inventor and publisher: b. Wallingford, Conn., 15 Jan. 1800; d. 17 July 1868. He received a common-school education and before he was 21 married, and with a partner opened a cabinet factory at Northampton, Mass. In 1822 he established himself at Springfield, Mass., where he was very successful. He expended considerable money on a stern-wheel steamboat, the first to ply on the Connecticut River above Hartford. A powder engine intended for its propulsion proved ineffective. In 1829 he obtained an interest in a paper-mill and removed to Saugerties, N. Y., where his inventive faculty produced a rag-cutting machine, which he patented and which is still used in all paper-mills. In 1835 he purchased from his brother-in-law, Benjamin Day, the New York *Sun,* the first penny paper (then a comparatively new sheet), and to Mr. Beach was due the subsequent growth and popularity of that newspaper. In 1846 President Polk sent Mr. Beach on a secret mission to Mexico. In 1847 Mr. Beach retired from active business and settled in his native town, where he died.

**BEACH, Rex** (Ellingwood), American author: b. Atwood, Mich., 1 Sept. 1877. After graduating from Rollins College, Winter Park, Fla., he studied law at the Chicago College of Law. His success as a storywriter, however, diverted him from the legal profession. Among his best known works are 'Pardners' (1905); 'The Spoilers' (1906); 'The Barrier' (1907); 'The Silver Horde' (1909); 'Going Some' (1910); 'The Ne'er-do-Well' (1911); 'The Net' (1912); 'The Iron Trail' (1913); 'The Auction Block' (1914); 'The Heart of the Sunset' (1915); 'Rainbow's End' (1916); 'Laughing Bill Hyde' (1917).

**BEACH.** See Coast; Dune; Ocean; Lake; Shore; Shore Lines.

**BEACH-FLEA,** one of a group of small amphipod Crustaceans (*Orchestia agilis*) which abound under sea wrack near high-water mark. When the dry weed is lifted they will be seen leaping like fleas, by means of the last three pairs of abdominal legs. They are brown, of the same color as the weed and wet sand beneath, about a quarter of an inch in length or about one-half as large as the larger and more southern kind of beach-flea (*Talorchestia longicornis*), which is nearly an inch long. Consult Arnold, 'Sea Beach at Low Tide.'

**BEACH-GRASS.** See Ammophila.

**BEACH-PEA,** a leguminous plant growing on beaches. See also Lathyrus.

**BEACH PLANTS.** Plants living normally on shores, particularly of the sea, or on the contiguous dunes and marshy strips, are usually characterized by fleshiness, leatheriness, downiness or dense hairiness. This is true of the maritime members of families otherwise quite different in appearance, and these peculiarities, resembling those of plants living in other saline and arid localities, are devices resulting from adaptation to similar desert conditions, for the beach sands become very hot and naturally receive practically no water from either sea or land, and are unable to conserve the rainwater. Thus the strand becomes a strip of desert. The succulence and unctuousness of such common plants as the seaside goldenrod (*Solidago*), of the saltmarsh and smooth aster (*Aster*), of certain huge tropical morning glories (*Ipomœa*), of the marsh-rosemary (*Statice*), of the yellow sand-verbena (*Abronia*) and others, are evidence of efforts on their part to store such water as may fall upon them, in the cells of their swollen tissues, and also to prevent its evaporation through the stomata. Some plants, as the Polygonella and the marsh-samphire (*Salicornia*), have further reduced their transpiring surface by assuming a cylindrical shape with scale-like leaves. Terete also are the bases of the leaves of the saltwort (*Salsola*) which are armed, against the attacks of animals wishing to forage on their juicy foliage, by stout prickles. Many of these fleshy plants also contain salts in their tissues that are strongly retentive of water; the saltwort having formerly been burned to obtain soda from its ashes. Others, like some tamarisks, exude salts that form a crust over the stomata pits in the daytime but by attracting dew and the moisture in the air and becoming liquefied furnish a certain amount of water at night.

The bearberry (*Arctostaphylos*), the bayberry (*Myrica*) and the beach plum (*Prunus*) exhibit the leathery and pubescent type of foliage calculated to resist drought by restraining transpiration by means of the thickened skin and hair. The pale pubescent under-surface of the latter's leaves occurs on plants living near water, and is designed to keep arising moisture from settling in and flooding the stomata.

Velvety pubescence on all surfaces attaining to the same end is present in the marshmallow (*Althæa*) and the clotbur (*Xanthium*). Many of the salt-marsh plants are decidedly hairy, serving the purpose of controlling evaporation and preserving the leaf from too much moisture.

Some of these beach-plants are useful aids in preventing the shifting of sands and dunes, the most important being the coarse grasses, marram (*Ammophila*) and sea-lyme (*Elymus*), whose tough long roots interweave through the sand, forming a mat that holds it in place. The beach thus reclaimed is gradually settled upon by sundry other sand-binding plants, as the bayberry, bearberry, abronias, beach plums, etc.; and certain trees as the tamarisk, some species of pines and cedars are also found there or may be planted. Consult Marilaun, A. Kerner von, 'Natural History of Plants'; Scribner, F. L., 'Sandbinding Grasses' (reprint from Yearbook of Agriculture, 1898), and 'Economic Grasses' (United States Division of Agron., Bulletin 14); 'Stock Ranges of Northwestern California' (Bulletin 12, Bureau of Plant Industry, United States Department of Agriculture).

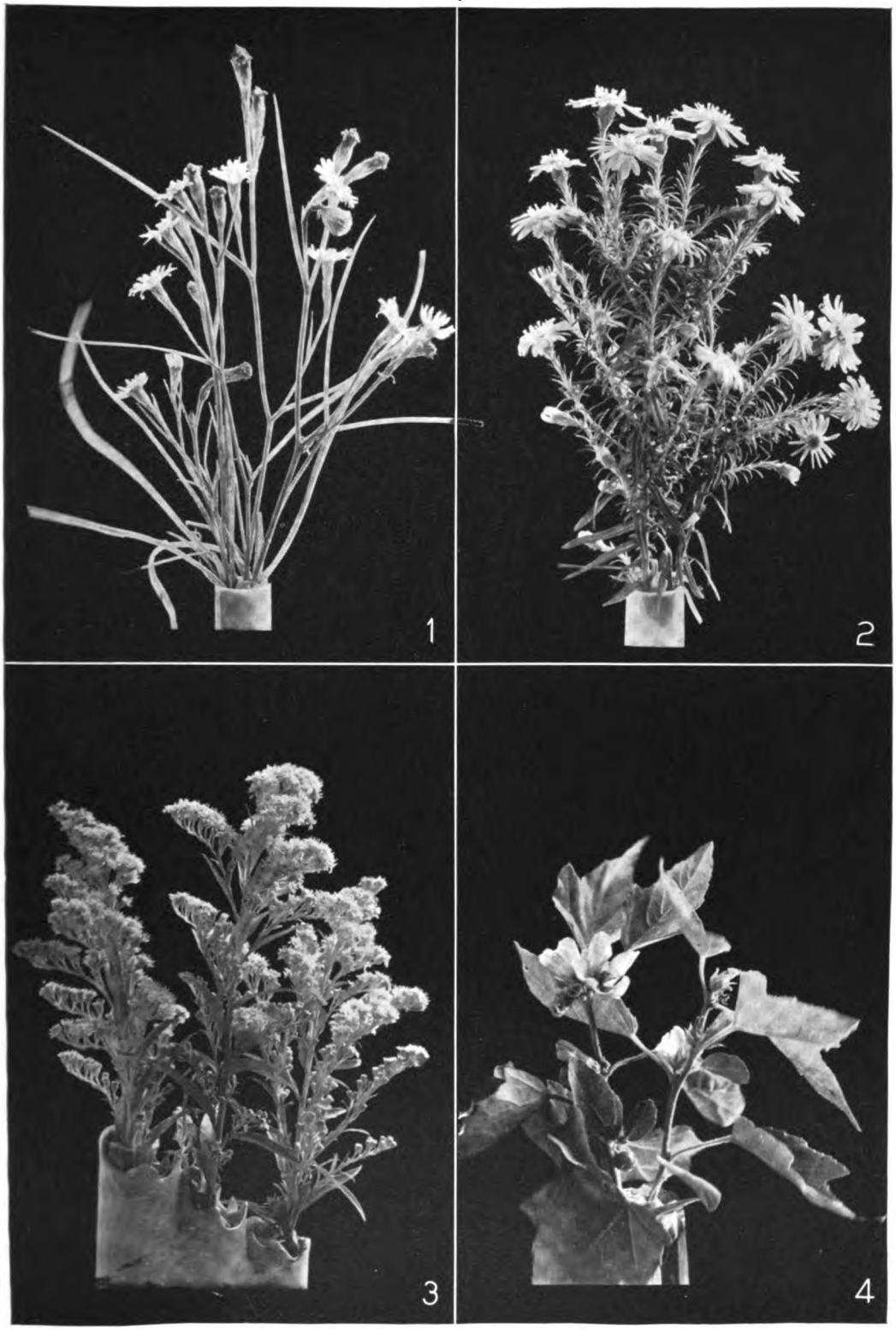
Helen Ingersoll.

**BEACH-PLUM.** See Plum.

**BEACH-ROBIN.** See Brant-bird.

**BEACHES, Raised,** terraced, level stretches of land, consisting of sand and gravel, and lying at a considerable distance above and away from the sea, but bearing sufficient evidences of having been at one time sea beaches. They are quite common along the coasts of continents in

## BEACH PLANTS




1 Marsh Aster
3 Goldenrod

2 Sandpaper Plant
4 Marshmallow

the higher latitudes. In California such terraces occur as high as 1,500 feet above the present sea-level, while the coasts of Scotland are marked by a series of terraces succeeding each other at distances of from 10 to 25 feet. That the materials composing the beaches were deposited beneath the sea is proven by the marine character of the fossils which are often found in abundance. The existence of raised beaches is of importance to the geologist, as it affords direct evidence of changes of level between the sea and the land in comparatively recent times, and explains the widespread occurrence of sedimentary rocks over continental areas. Many large lakes are also fringed by terraces, but in this case they have resulted from a lowering of the water level and not from coastal movements.

**BEACHY HEAD,** England, a promontory on the coast of Sussex, about three miles southwest of Eastbourne; height 532 feet. Here a combined Dutch and English fleet of 57 vessels under Lord Torrington was defeated by a French fleet of 70 ships under Tourville, in 1690. In 1838 a revolving light was erected here, 285 feet above the level of the sea, visible in clear weather from a distance of 28 miles. This was superseded in 1902 by a new lighthouse built in the sea, about 600 feet from the cliff, and 123 feet high.

**BEACON,** N. Y., city of Dutchess County, on the Hudson River, and the New York Central & Hudson River and the Central New England division of the New York, New Haven & Hartford railroads, 60 miles north of New York city. The city was formed by the merging of the villages of Matteawan and Fishkill Landing; it was incorporated in May 1913, and holds the first charter under the commission form of government granted in New York State. Lying at the foot of Mount Beacon, on the upper margin of the Highlands of the Hudson, and extending westward to the shores of the river itself at the lower end of Newburgh Bay, its scenery is unrivaled. An inclined railway runs up the western slope to the summit of Mount Beacon, from which a far-famed view of mountain, plain and river is enjoyed, and where a summer colony makes its home. The city of Newburgh across the bay is connected with Beacon by ferry. Beacon has 11 churches, a hospital, a library, two national banks and two savings banks, and the Sargent Industrial Free School for Girls. The city conducts three grade schools and a high school, paid fire department, municipal waterworks and a sewage disposal works. The industries of the city are varied and important, embracing some of the larger factories along the Hudson. They include chiefly wool and straw hats, rubber goods and embroidery, with smaller plants devoted to making tools and other iron products, silk-throwing, paper boxes and brick. The United States census of manufactures for 1914 showed 41 establishments of factory grade, employing 2,033 persons, 1,806 being wage earners receiving annually $958,000 in wages. The capital invested aggregated $3,849,000, and the year's output was valued at $3,520,000; of this, $1,778,000 was the value added by manufacture. There are three newspapers, two daily and one weekly. Pop. (1910) 10,629.

**BEACON,** a conspicuous mark or signal either used to alarm the country in case of invasion, or as a guide to mariners. The alarm beacon was usually fire placed on the tops of high hills, the flames of which could be seen at a great distance by night, and the smoke by day. They were in great use for rousing the border on an invasion either by Scotch or English. A beacon to mariners is either a landmark erected on an eminence near the shore, or a floating signal moored in shoal water.

**BEACON HILL,** one of the original three hills of the peninsula of Boston. It is north of Boston Common, and received its name from the fact that the public beacon was fixed upon its summit in the earliest colonial period. It has been much reduced in height, and the State House now occupies its highest position. Beacon street extends in a westerly direction over the hill, skirting the Common and Public Garden. See BOSTON.

**BEACONSFIELD,** bĕk'ŏns-fēld or bē'kŏns-fēld, **Benjamin Disraeli** (EARL OF), English statesman: b. 21 Dec. 1804; d. 19 April 1881. He was the eldest son of Isaac D'Israeli (see D'ISRAELI, ISAAC), the well-known author of the 'Curiosities of Literature'; his mother also being of Jewish race. Little is recorded of his early education, though it is certain he never attended a public school or a university. After the death of his father in 1816, Isaac D'Israeli abandoned the principles of Judaism; and young Benjamin was in 1817 baptized into the Church of England. He was apprenticed to a firm of attorneys, but did not remain long in this uncongenial occupation. His father's position gained him an easy entrance into society, and before he was 20 he was a frequenter of such salons as those of Lady Blessington, and he became a well known man about town.

In 1826 he published 'Vivian Grey,' his first novel, a work which became very popular, and, considering the youth of its author, displays remarkable cleverness and knowledge of the world. He now traveled for some time, visiting Italy, Greece, Turkey and Syria and gaining experiences which were afterward reproduced in his books. In 1831 another novel, 'The Young Duke,' came from his pen. It was followed by 'Contarini Fleming' (1832); 'Alroy' (1833); 'The Revolutionary Epic' (a poem, 1834); 'Henrietta Fleming' (1837); and 'Venetia' (1837). Other writings of this period are 'A Vindication of the English Constitution' (1834); and 'Alarcos, a Tragedy' (1839).

His father having acquired a residence near High Wycombe, Buckinghamshire, young Disraeli attempted to get elected for this borough in 1832. He came forward as a Radical or «people's» candidate as against the Whigs, and he was supported by the Tories, as well as by Hume and O'Connell, but was defeated. At the general election after the passing of the Reform Bill he again unsuccessfully contested High Wycombe, and the like ill-fortune attended him on another attempt in 1835, as also at Taunton the same year. On the latter occasion he appeared in the character of a decided Tory, and his change of political opinions naturally occasioned a good deal of comment. To this period belongs the noted passage of arms between him and O'Connell, which was signalized

by a strength of language happily rare between public men in these days.

At last, however, he gained an entrance to the House of Commons, being elected for Maidstone in 1837. His first speech was treated with ridicule; he had to stop abruptly and sit down, but he finished with the prophetic declaration that the time would come when the House would hear him. In 1839 he married the widow of his colleague in the representation of Maidstone, a lady 15 years older than himself. The union was a very happy one. At the general election of 1841 he was sent to Parliament by Shrewsbury. He had now gained some reputation, and for some years he was an enthusiastic supporter of Sir Robert Peel. About this time he became leader of what was known as the "Young England" party, the most prominent characteristic of which was a sort of sentimental advocacy of feudalism. This spirit showed itself in his two novels of 'Coningsby; or, The New Generation,' and 'Sybil; or, The New Nation,' published respectively in 1844 and 1845.

For some years previous to the downfall of Sir Robert Peel in 1846 he was most persistent and bitter in his hostility to this statesman, whom he had so recently supported, being the advocate of protection against the free-trade policy of Sir Robert. His clever but truculent speeches of this period greatly increased his reputation, and by 1847 he was recognized as one of the leaders of the Tory party. He purchased the manor of Hughenden in Buckinghamshire, was in the above year elected for this county, and retained his seat till raised to the peerage nearly 30 years later. In 1847 he published his novel of 'Tancred; or, The New Crusade,' a somewhat extravagant production containing enigmatic allusions to the great "Asian mystery." In 1852 he published 'Lord George Bentinck, a Political Biography' of the Protectionist leader in the Commons.

His first appointment to office was in February 1852, when he became Chancellor of the Exchequer under Lord Derby. In December, however, the ministry was defeated, and Mr. Disraeli again became leader of a Conservative Opposition. A keen disappointment was experienced on the breakdown of the Aberdeen ministry in 1855, when Lord Derby, who was distrustful of Disraeli, refused to form a ministry. He remained out of office till 1858, when he again became Chancellor of the Exchequer with Lord Derby as his chief. As on the former occasion his tenure of office was but short; a reform bill which he had introduced causing the defeat of the government and their resignation after an appeal to the country. During the next six years, while the Palmerston government was in office, Mr. Disraeli led the opposition in the lower House with conspicuous ability and courage. He strongly counselled a policy of strict neutrality during the American Civil War. He spoke vigorously against the Reform Bill brought forward in 1866 by the Russell-Gladstone government; but when, soon after, he came into power along with his chief, Lord Derby, the demand for reform was so urgent that he decided to "dish the Whigs" and to bring in a reform bill himself. Accordingly, in August 1867, a measure by which the parliamentary representation was reformed became law, being piloted through Parliament by Mr. Disraeli with remarkable tact and dexterity. The Confederation of Canada was also carried through.

In February 1868 he reached the summit of his ambition, becoming Premier on the resignation of Lord Derby, but being in a minority after the general election he had to give up office the following December. In 1874 he again became Prime Minister with a strong Conservative majority, and he remained in power for six years. This period was marked by his elevation to the peerage in 1876 as Earl of Beaconsfield, and by the prominent part he took in regard to the Eastern Question and the conclusion of the Treaty of Berlin in 1878, when he visited the German capital. In the spring of 1880 Parliament was rather suddenly dissolved, and, the new Parliament showing an overwhelming Liberal majority, he resigned office, though he still retained the leadership of his party. Not long after this the publication of a novel called 'Endymion' (1880; his previous one, 'Lothair,' had been published 10 years before) showed that his intellect was still vigorous. His physical powers, however, were now giving way, and he died after an illness of some weeks' duration, and was buried at Hughenden. His wife, who was created Viscountess Beaconsfield in 1868, died in 1872.

The career of Lord Beaconsfield forms one of the most striking romances of the 19th century. Born of an alien and despised race, and at the outset of his career regarded as a mere man of fashion and a fop, by his own talents he raised himself to the head of the aristocratic party in English politics, the leadership in which had always been a preserve for members of the patrician caste. Disraeli was pre-eminently the architect of his own fortunes, and for the eminence to which he finally attained he had to fight every inch of the ground, and especially against the distrust of his own party which he "educated" in the principles of Tory democracy, much against its own inclinations. He was endowed with great intellectual power, a patience and resourcefulness that were inexhaustible, unflinching courage and remarkable tact and ability in the art of managing men. As a House of Commons man he was showy rather than solid, but in wit, sarcasm, epigram and vituperative power he was a master. "He was one of the three statesmen in the House of Commons of his own generation," says John Morley, "who had the gift of large and spacious conception of the place and power of England in the world, and of the policy by which she could maintain it." "The faculty of slow, reflective brooding was his, and he often saw deep and far." Comparison is sometimes made between his legislative output and that of his great rival, Gladstone, which is much larger; but it must be borne in mind that from 1852 to 1895 the latter was a principal figure on the stage, whereas it was only in the six years between 1874 and 1880, when Disraeli was a septuagenarian, that he held office with a solid majority at his back. His novels are open to criticism on many grounds, especially on account of the stilted rhetoric which defaces them; but he had imagination and fancy, wit and epigrammatic power, and is unexcelled as

a portrayer of certain aristocratic types. Their success on publication owed something to the art with which he introduced real personages into them under a more or less penetrable disguise.

**Bibliography.**— The definitive and final "Life" of Lord Beaconsfield is that now issuing, based on Disraeli's letters and papers and other authentic documents. Between 1908–16 four volumes had been issued. The work was placed under the editorship of W. F. Monypenny, whose death occurred after two volumes had been published, when the task was taken up by G. E. Buckle. Disraeli's 'Home Letters and Correspondence with His Sister,' with additional letters and notes by his brother Ralph, were reissued in 1887. His 'Speeches,' edited by T. E. Kebbel, were published in 1881. Biographies have been written, among others by G. Brandes (translated by Sturge, London 1880); J. A. Froude (London 1890); Theodore Martin (London 1881); Wilfrid Meynell (London 1903); and an unfriendly one by T. P. O'Connor (revised 1904). Consult also Sir William Fraser's 'Disraeli and His Day' (1891). An appreciation of his powers as a novelist appears in the second series of 'Hours in a Library,' in which the Author, Leslie Stephen, laments "the degradation of a promising novelist into a prime minister."

D. S. DOUGLAS.

**BEACONSFIELD**, Africa, town of Cape Colony, in Griqualand West, formerly known as Du Toit's Pan. It lies a little to the east of Kimberley, with which it is connected by tramway, and is, like it, an upgrowth of the diamond fields. It is well supplied with churches, schools and hotels. Pop. 14,294.

**BEACONSFIELD**, England, market-town in Buckinghamshire, 24 miles west by north of London. It is situated on high ground, and its name is supposed to have originated from a beacon once set up there. The remains of Edmund Burke, who resided at Gregories in this parish, are deposited in the parish church; and the churchyard contains a monument in honor of the poet Waller, to whom the manor belonged, as it still does to his descendants. It gave its name to the title of Benjamin Disraeli, Earl of Beaconsfield. Pop. 2,511.

**BEADLE.** (1) An officer in an English university, whose chief duty is to walk with a mace in a public procession. The University of Oxford has four and Cambridge two beadles (or bedels), those in the former being attached to each of the faculties of law, medicine, arts and divinity. (2) An inferior parish officer, whose business is generally to execute the orders of the vestry, by whom he is appointed. These parochial beadles were originally officers given to the rural deans to cite the clergy and church-officers to visitations, and for other purposes. In some parts of Great Britain beadles act as town criers.

**BEADS**, small perforated ornaments, generally of a round shape and made of glass, but also of gold, silver and other metals, paste, coral, gems, etc. The use of them as ornaments belongs to very early times, and this use, still continued, has made them an important article of trade with savage tribes. Glass beads are supposed to have been manufactured by the Phœnicians more than 3,000 years B.C. Beads have been found in the ruins of Assyrian temples, also as decorations of Egyptian mummies, and in the graves of the ancient Greeks, Romans and Britons. The manufacture of glass beads was introduced into modern Europe by the Italians, and in the neighborhood of Venice it is still an important branch of industry. On the island of Murano alone several thousand workmen are employed in this manufacture. Birmingham is the chief seat of the manufacture of beads in Great Britain. For their use in religion see ROSARY.

**BEAGLE**, a small hunting dog; in general appearance a diminutive fox hound, solidly built, well set upon straight fore legs, with plenty of bone in proportion to its size, good, hard feet and a broad, deep chest with ample lung capacity. It is of good disposition, and clever and industrious in the field. In color and marking it much resembles the fox hound, black, white and tan being the more common colors, and these in more or less solid or pied masses. In its original home, Great Britain, there are both rough and smooth varieties, but the typical American beagle is smooth-haired. Beagles vary in height from 12 to 15 inches, and while excellent trackers are not so fast but that they can be followed on foot, a very common sport in Great Britain. Their voices are exceedingly musical and justify the name sometimes given them of "buglers." They are principally used for rabbit-hunting. In former times a very diminutive breed was in favor, according to one authority, no larger than well-grown kittens — so small, in fact, that it is said a whole pack could be carried afield in a pair of panniers slung across a pony's back.

**BEAGLE, The**, a small ship of the British navy employed, under the command of Captain (afterward Admiral) Fitzroy, in making surveys of the coast of Patagonia and other South American shores and waters, and later making a voyage around the world. The expedition, which started from Plymouth 27 Dec. 1831 and returned 2 Oct. 1836, had for its naturalist the famous Charles Darwin. It was on board the *Beagle* that "the theory of evolution originated."

**BEAGLE ISLAND**, an island discovered by Admiral Fitzroy during a voyage in H. M. S. *Beagle*. The channel of the same name is on the south side of the island of Tierra del Fuego.

**BEAK**, or **BILL**, the projecting jaws or snout of a bird or other animal, when prolonged into an instrument for seizing or penetrating objects, and formed of hard materials, as bone, or covered with a rigid envelope, as of horn or chitin. It is most characteristic of birds, where it is called "bill" or "neb," and forms the principal means for obtaining, as well as devouring food (except in most birds of prey), and where it takes on a great variety of shapes and characteristics adapted to special habits and purposes (see BIRDS). A more or less similar prolongation of mouth-parts occurs in many other animals, however, and receives a similar name. Among mammals, the duckbill (q.v.) is a conspicuous example of a true mammal with the lips formed into a horny bill much like that of a duck, and similarly used. The turtles have horny, projecting, parrot-like jaws of the same sort; and a curious imitation of this occurs among cephalopod mollusks. The prolonged

jaws of various fishes, as of gars ("billfish"), sturgeons, etc., receive the term (technically *rostrum*), and these are often bird-like, as in the case of the spoon-billed catfish. The term is also borrowed by entomologists to describe the elongated mouth-parts of many insects, such as blood-sucking flies, juice-sucking plant-bugs, weevils and other forms. The prolonged tubular or trough-like parts (canals) of many gastropod shells protecting the siphon, and the prominent umbos of such bivalve shells as the cockles, clams and fresh-water mussels, are also termed "beaks."

**BEAL,** bēl, **George Lafayette,** American military officer: b. Norway, Me., 21 May 1825; d. 11 Dec. 1896. When the Civil War broke out he was captain of the Norway light infantry, and with this company was mustered into the 1st Maine regiment for the three months' campaign. At the end of this service he was commissioned colonel of the 19th Maine infantry, which took part in the battles of Cedar Mountain and Antietam and covered the retreat of General Banks from Winchester to Williamsport, Va. He was mustered out with his regiment in May 1863; volunteered again; was made colonel of the 29th Maine, and promoted to brigadier-general of volunteers 30 Nov. 1864, for his services in the Red River campaign. On 15 Jan. 1866 he was mustered out of service with the brevet of major-general of volunteers. In 1880–85 he was adjutant-general of Maine, and 1888–94 State treasurer.

**BEAL, Samuel,** English Orientalist: b. Devonport, 27 Nov. 1825; d. 20 Aug. 1889. He was graduated from Trinity College, Cambridge, in 1847, was head master of Bramham College from 1848 to 1850, and ordained priest in 1852. He entered the navy, acting as chaplain and naval instructor between 1852 and 1877, when he retired. He served in the China War, 1856–58. On his retirement he was elected professor of Chinese at University College, London, a post he held till his death. His principal work consisted in tracing the early history of Buddhism in original Chinese records. He published 'Fah-Hian and Sung-Yun, Buddhist Pilgrims from China to India, 400 A.D.–518' (1869); 'A Catena of Buddhist Scriptures' (1871); 'The Legend of Sakya Buddha' (1875); 'Abstract of Four Lectures on Buddhist Literature in China' (1882); 'Si-Yu-Ki: or Buddhist Records of the Western World' (translated from the Chinese of Hiuen Tsiang, 1885), and several other books.

**BEAL, William James,** American botanist: b. Adrian, Mich., 11 March 1833. He was graduated A.B. at the University of Michigan in 1859; A.M., 1862; S.B., Harvard, 1865; M.S., University of Chicago, 1875; (hon. Ph.D., University of Michigan, 1880; D.Sc., Michigan State Agricultural College, 1905). Teacher natural science, Friends' Academy and Howland Institute, Union Springs, N. Y., 1859–68; professor of botany, University of Chicago, 1868–70; lecturer on botany, 1871; professor of botany and horticulture, 1871–81; professor of botany and forestry and curator of botanical museum, 1882–1903; professor of botany, 1903–10; since emeritus professor, Michigan State Agricultural College; director State Forestry Commission, 1888–92. First president Society for the Promotion of Agricultural Science, 1881–82; Association Botanists of United States Experiment Stations, 1888; first president Michigan State Academy Science, 1894; president Michigan State Teachers' Association, 1881; member Botanical Society of America; American Pomology Society; fellow of the American Association for the Advancement of Science. He published 'The New Botany' (1881); 'Grasses of North America' (Vol. I, 1887; Vol. II, 1896); 'Seed Dispersal' (1898); 'Glossary of Botanical Term,' etc.

**BEALE, Dorothea,** English teacher: b. London, 21 March 1831; d. 9 Nov. 1906. She became mathematical tutor in Queen's College in 1849 and later Latin tutor in the school; and head teacher in the Clergy Daughters' School, Casterton, in 1857. In 1858 she was appointed principal of Cheltenham Ladies' College, the first proprietary girls' school in England, founded four years earlier on a capital of $10,000. When she took up office there were 59 pupils; in 1912 there were 1,000, with 120 teachers. During her term $800,000 had been spent on buildings, and at the close the annual income was $300,000. Her life was given to the college — to which she bequeathed the residue of her estate, amounting to $250,000 — and she was a pioneer in the higher education of women. Her publications include 'Textbook of English and General History'; 'Chronological Maps'; 'Work and Play in Girls' Schools,' etc.

**BEALE, Edward Fitzgerald,** American diplomatist: b. Washington, D. C., 4 Feb. 1822; d. 22 April 1893; graduated at the United States Naval Academy 1842 and at the beginning of the Mexican War was assigned to duty in California under Commodore Stockton. After the war he resigned his naval commission and was appointed superintendent of Indian affairs for California and New Mexico. He was commissioned brigadier-general in the army by President Pierce. He served in the Union army in the Civil War and at its close engaged in stock-raising in Los Angeles, Cal., till 1876, when President Grant appointed him United States Minister to Austria.

**BEALE, Lionel Smith,** English physician and biologist: b. London, 5 Feb. 1828; d. 28 March 1906. He was the son of Lionel John Beale, M.R.C.S. He was educated at King's College School and King's College, London. In 1852 he established a laboratory for chemical and microscopical studies and in the following year became professor of physiology and general and morbid anatomy in King's College, London. In the same college he held in succession the professorships of pathology and of the principles and practice of medicine, but in 1896 he retired from the latter post. He was a fellow of the Royal Society and for some years acted as treasurer of the Royal Microscopical Society. His published works deal with medical, anatomical, physiological and biological subjects, the microscope, etc. Among the most important are 'How to Work with the Microscope'; 'Protoplasm; or, Life, Matter and Mind'; 'Life and Vital Action in Health and Disease'; 'The Physiological Anatomy and Physiology of Man' (in collaboration with Dr. Todd and Sir W. Bowman);

'Disease Germs'; 'Life Theories and Religious Thought'; 'The Mystery of Life,' etc.

**BEALE, Truxton,** American diplomat: b. San Francisco, Cal., 6 March 1856. Graduating from Pennsylvania Military College in 1874, he studied law at Columbia University and was then admitted to the bar. But instead of practising law, he spent the next 13 years in the management of his father's ranch in California. In 1891 he was sent to Persia as United States Minister. The following year he was sent to Serbia, Rumania and Greece, where he acted as Minister plenipotentiary. From 1894 to 1896 he traveled in eastern Asia, visiting Chinese Turkestan and Siberia. He has been a frequent contributor to the magazines on international questions. He is the author of 'The Man Versus the State' (1916).

**BEALL, John Young,** Confederate guerrilla: b. Virginia, 1 Jan. 1835; d. 24 Feb. 1865. He was appointed acting master in the Confederate naval service in 1863. On 19 Sept. 1864 he and a number of followers took passage on the Lake Erie steamer *Philo Parsons* and at a given signal took possession of the vessel, making prisoners of the crew. They also scuttled another boat, the *Island Queen,* and tried to wreck a railroad train near Buffalo, N. Y. In spite of a proclamation of Jefferson Davis assuming responsibility for this expedition, Beall was hanged on Governor's Island, N. Y., on the ground that, if acting under orders, he should have shown some badge of authority.

**BEAM,** in architecture, a long, straight and strong piece of wood, iron or steel, especially one holding an important place in some structure and serving for support or consolidation; often equivalent to girder (q.v.). In a balance it is the part from the ends of which the scales are suspended. In a loom it is a cylindrical piece of wood on which weavers wind the warp before weaving; also the cylinder on which the cloth is rolled as it is woven. In shipbuilding, one of several strong transverse pieces of timber stretching across the ship from one side to the other, to support the decks and retain the sides at their proper distance, with which they are firmly connected by means of strong knees and sometimes of standards. They are sustained at each end by thick stringers on the ship's side called shelf-pieces. The main-beam is next abaft the main-mast. The greatest beam of all is called the midship beam. A ship is said to be "on her beam-ends" when she lies entirely on her side, so that the beams are almost at right angles to the surface of the water. An object is said to be "a-beam" when it is in a line with the beams of the ship and accordingly at right angles to its length.

**BEAM ENGINE.** See STEAM ENGINE.

**BEAM-TREE, White** (*Pyrus aria*), a European and Asiatic tree of the family *Malaceæ,* rarely exceeding 50 feet in height, often cultivated in dry and exposed situations for its ornamental leaves, which are bright dark-green above and light beneath; and for its large terminal corymbs of flowers which appear in late spring followed by showy orange-red or scarlet, acid and astringent fruits which resemble those of the service-berry and which are used to make a kind of beer. Its hard, fine-grained wood is made into cog-wheels. It is closely related to the mountain-ash (q.v.).

**BEAN, Nehemiah S.,** American inventor: b. Gilmanton, N. H., 1818; d. 20 July 1896. He learned the machinist's trade, and in the winter of 1857–58 built his first steam fire engine, which he named the Lawrence, and sold it to the city of Boston. In 1859 he took the management of the Amoskeag Locomotive Works in Manchester, where he had been employed in 1847–50. During 1859 he built the "Amoskeag Steam Fire Engine No. 1," the first of a class of engines which now is used everywhere.

**BEAN, Tarleton Hoffman,** American ichthyologist: b. Bainbridge, Pa., 8 Oct. 1846, M.E., State Normal School, Millersville, Pa., 1866; M.D., Columbian (now George Washington) University, 1876; M.S., Indiana University, 1883. He was curator of the department of fishes, United States National Museum, 1880–95; director of the New York Aquarium, 1895–98; and subsequently State fish culturist of New York from 1906. He was editor of the *Proceedings and Bulletins* of the United States National Museum, Washington, 1878–86, and of the 'Report and Bulletin of the United States Fish Commission,' Washington, 1889–92; was assistant in charge of the division of fish culture in the United States Fish Commission, 1892–95; acting curator of fishes at the American Museum of Natural History, New York, 1897. In 1893 he represented the United States Fish Commission at the World's Columbian Exposition, and in 1895 at the Atlanta Exposition. In 1899 he was appointed director of forestry and fisheries of the United States Commission to the Paris Exposition of 1900, and chief of the departments of fish, game and forestry at the Saint Louis Exposition, 1902–05. He was made chevalier, Legion of Honor and officer of Mérite Agricole, France; knight of the Imperial Order of the Red Eagle, Germany; Order of the Rising Sun, Japan; member of the American Forestry Association and the American Fisheries Society, also member of the Danish Fisheries Society, and the Biological Society of Washington. His publications include 'The Fishes of Pennsylvania' (1893); 'The Salmon and Salmon Fisheries'; 'Oceanic Ichthyology' (with late George Brown Goode) (1896); 'The Fishes of Long Island' (1902); 'The White World' (part author), (1902); 'The Food and Game Fishes of New York' (1903); 'The Basses, Fresh-water and Marine' (part author), (1905); 'The Fishes of Bermuda' (1906). He also contributed articles to *Forest and Stream.*

**BEAN,** a plant of the family *Fabaceæ,* or legumes. Originally the smooth kidney-shaped, flat-sided seed of the broad bean, *Vicia faba,* it is now applied to various genera, usually with a specific epithet, as Lima bean, etc.

The broad bean (*Vicia faba*) is the bean of history. Its origin is doubtful, but it is probably a native of southwestern Asia and northern Africa. It is much grown in Europe, especially in England, but the hot dry summers prevent its cultivation in most parts of the United States. It is grown successfully in the maritime provinces of Canada, and in other parts, with corn and sunflowers, to make ensilage. It is an annual plant, growing from two

to four feet high, erect, with thick angular stems; flowers usually white with black on the wings. The pods, which contain the thick flattened seeds, vary from two to four inches up to 18 inches long. The common varieties are the Broad Windsor and Mazayan; they are quite hardy and should be sown early. The soils best suited are heavy loams and clays. The green seeds are eaten as a vegetable, or, if allowed to mature, are ground and used as feed for horses and cattle. The straw is fed to cattle.

The kidney-bean of Europe is known in the United States as the bean, *Phaseolus vulgaris;* it embraces all the common field, garden, snap and string beans, both bush and climbing. The French know it as the haricot. It is probably a native of South America, and was introduced into Europe during the 16th century. Over 150 varieties are in cultivation; the growers usually group them into bush- and pole-beans. The bush-beans embrace the "field beans" grown for dry shelled seeds, also the green-podded and yellow-podded garden, string or snap beans. The pole-beans are usually grown for use while green. Bush-beans do well on a good warm loam. The yellow-podded varieties and pole-beans require a richer soil. They should not be planted until danger from frost is over, and require constant cultivation while growing. Leading field varieties are white marrowfat, navy or pea bean, medium and the kidneys: in string-beans, early Valentine, stringless green-pod, refugee, etc.: in yellow-podded beans, black wax, golden wax, kidney and white. Consult Bulletins 87 and 115, Cornell Experiment Station. For forcing pole-beans under glass, see Bailey's 'Forcing Book'; Bulletin 62, New Hampshire Experiment Station.

The Lima bean (*P. lunatus*) is the most popular pole-bean. It is of South American origin, but is now grown in various parts of this country, most of the seed being raised in California. The short, flat, slightly kidney-shaped seeds are enveloped in flat, broad pods. The soy-bean (q.v.) (*Glycine hispida*) is a bushy, erect, hairy plant which bears pea-like seeds in small pods. It is a native of China and Japan, where it is largely grown. It is used for forage and soiling. The cowpea (q.v.) (*Vigna catjang*) is generally used for forage, soiling, hay and green manuring. The scarlet runner (*P. multiflorus*) is a perennial. It is grown largely for ornament, but in England the seeds and pods are eaten as a vegetable. The Adzuki bean (*P. radiatus*) is a native of Japan, and a recent introduction in America. Consult Bulletin 32, Kansas Agricultural Experiment Station. The frijole (*P. spp*) is grown in the Southwestern States and in Mexico, where it is a staple food.

Other important Oriental beans, but not very common here, are: Mungo-beans (*P. mungo*); various species of Dolichos, as the asparagus-bean (*D. sesquipedalis*); and the locust or carob bean (*Ceratonia siliqua*), the pods of which are sold by confectioners as Saint John's bread. The sweet pulp which surrounds the seed is eaten, especially in the Mediterranean. The pods and seeds are ground and used extensively as feed for cattle and other animals. The velvet-bean (species of *Mucuna*) is often grown for an ornament; also for forage and soil renovation in the southern States. It ripens seed only in the Gulf States. The beans and pods, when ground, are fed to cattle. The cooked green beans have caused illness in those who have eaten them. In 1899, 15,004 acres of green beans were grown, yielding 1,512,642 bushels, or an average of 100.8 bushels per acre. The five leading States in bean cultivation are New York, New Jersey, Florida, California and Virginia.

**Uses and Feeding Values.**— The seeds and sometimes the pods are used, either green or dry, as food for man and animals. Some species are grown for forage, hay or green manuring. Owing to their nitrogen-gathering propensities they all aid in soil-renovation.

The average percentage composition is:

| | Water | Protein | Nitrogen-free extract | Ether extract | Ash | Fuel value of one pound |
|---|---|---|---|---|---|---|
| Dry shelled beans... | 12.6 | 22.5 | 29.6 | 1.83 | .51 | 605 calories |
| Fresh shelled beans. | 58.9 | 9.4 | 29.1 | 0.62 | .0 | 740 " |
| Fresh string beans.. | 89.2 | 2.3 | 7.4 | 0.30 | .8 | 195 " |

With man, on an average, 90 per cent of the dry matter is digestible; 80 per cent of the protein; 96 per cent of the nitrogen-free extract; and 80 per cent of the ether extract. String-beans or green shell beans are usually boiled and served in various ways. In composition they compare favorably with other vegetables. Dry beans are baked with salt pork or beef and used for soups and other dishes. They are a cheap, nutritious food, rich in starch and in the proteid, legumin; hence they may be used to replace meat in the diet. If the skins are removed they are easier of digestion and are not so liable to cause flatulency; the latter is due to the production of methane by fermentation in the intestines. Shell- and string-beans are preserved by evaporation or canning. String-beans are also preserved with salt. Cooked dry beans are canned. Bean flour consists of beans ground. Bean meal is used in Europe as feed for horses, cattle and hogs. Bean cake is the residue after the oil has been extracted; it is fed to cattle in northern China. Bean curd is eaten by the natives of northern China.

**Bean Diseases.**— Pod-rust; anthracnose (*Colletotrichum lindemuthianum*), a fungus which attacks the stems, leaves and fruit. The disease may be carried over in the seed, the affected ones being recognized by the yellow or brown discoloration. A black discoloration with ensuing brittleness marks the progress of the disease on the leaves. The selection of sound seed, immediate removal of infected plants and spraying with Bordeaux mixture are recommended. The bean-rust (*Udomyces phaseoli*) appears as small brown, nearly circular and slightly elevated dots on the leaves. These discharge a brown powder, the spores of the disease. Spraying with Bordeaux mixture is recommended. Blight (*Phytophthora phaseoli*) attacks the Lima bean. Spraying with copper compound is recommended. The bean-weevil (*Bruchus obtectus*) may injure the beans when stored. After harvesting, treat the seed two or three times, at intervals of three or four weeks, with carbon bisulphide.

Consult De Candolle, 'Nativity of the Bean'; Gray and Trumbull, "Origin of Cultivated Plants," *American Journal of Science*, XXVI, 130; Bailey, 'Standard Cyclopedia of Horticulture.'

**BEAN, Saint Ignatius,** a seed which yields strychnin. See STRYCHNOS.

**BEAN-GOOSE** (*Anser segetum*), a species of European wild goose, distinguished from the true wild goose (*A. ferus*) by its comparatively small and short bill, which, as far as the nostril, is black, and above it of a reddish flesh color, whereas that of the gray lag, or true wild goose, is orange-red, with a touch of grayish-white. They feed generally on high grounds, considerably inland, selecting particularly young wheat, stubbles sown down for grass, and, in spring, fields sown with beans, their fondness for which is supposed to have given them their name. They breed chiefly within the Arctic Circle, but their nests are often found in large numbers in the Hebrides. The bean-goose being rather less in size than the common wild goose, but having the same color, is sometimes provincially called the small gray goose.

**BEAN WEEVIL,** a beetle, *Brunchus obtectus,* which is smaller than the pea-weevil, measuring .15 of an inch in length. Compared with that insect it is lighter and more uniform in color, being of a tawny gray, without the white spots so conspicuous in *B. pisi.* The uniform tawny gray elytra are spotted with a few oblong dark spots, situated between the striæ, the antennæ also differ in having the four basil joints more reddish than in *B. pisi,* while the terminal joint is red. The legs also are much redder. The eggs are laid on the outside of the bean; the young hatch and bore in, and there may be eight or 10 grubs in a single bean. The chrysalis lies in a cavity in the bean just large enough to receive its body. The best remedy is carefully to examine the beans in the autumn and before sowing time, when the presence of the weevil can be easily detected by the transparent spots made by the larva. These should be burned and such beans as are apparently uninjured should be soaked for a minute in boiling-hot water, so that no beetles be overlooked.

**BEAR,** or **Bere,** a species of barley (q.v.).

**BEAR FLAG WAR,** a rising against the Mexican government in 1846, by a small body of emigrants from the United States who had settled in California, thought to have been incited by Capt. John C. Frémont (q.v.). He was then commanding a small detachment of American troops in California and a few Americans having proclaimed a republic in Sonoma and raised a flag on which was a figure of a bear, Frémont joined the insurgents with his troops. The Mexican War began in the following July and the Bear Flag War then became a part of the American scheme for the conquest of California.

**BEAR ISLAND.** An arctic island in Barents Sea, about 200 miles north-northwest of North Cape, Norway, discovered by Barents (1596). Deserted with the decadence of whaling, it now becomes a land of economic importance. Extensive deposits of low-grade coal, easily mined, have been found, the strata of the north coast being some six feet thick. The development of the industry has been commenced by a Norwegian corporation, which maintains a permanent colony, with additions in summer. A wireless station is under installation, and the construction of port facilities is planned.

**BEAR LAKE, Great,** a body of water in Canada, so named on account of its situation directly under the Arctic Circle, and therefore under the constellation Ursa Major. It is of very irregular shape, having five arms projecting out of the main body, and its greatest diameter is 150 miles. The principal supply of the lake is Dease River, which enters it from the northeast. Its outlet is on its southwestern extremity, at the bottom of Keith Bay, through Bear Lake River, which empties into Mackenzie River. The surface of Bear Lake is not more than 200 feet above the Arctic Ocean; consequently its bottom must, like many of the northwestern lakes, lie considerably below the level of the sea. Great Bear Lake abounds in fish of many varieties, among which the herring-salmon is noted. The second land expedition, under Franklin, in 1825, wintered on the western shore of this lake, near its outlet, where they built Fort Franklin. Dr. Richardson, a member of the expedition, mentions a curious circumstance concerning the singing of birds of this lake, that when they first appeared after the long Arctic winter they serenaded their mates at midnight, and were silent during the day. The waters of the lake are so clear that a white substance can be distinctly discerned at the depth of 90 feet. The lake is situated about 250 miles east of the Rocky Mountains, about the same distance south of the Arctic Sea and 400 miles northwest of Slave Lake. It is the basin of a water-shed of about 400 miles diameter.

**BEAR MOUNTAIN,** the designation of a hill some 750 feet in height, situated in the northeastern part of Dauphin County, Pa. In its vicinity are valuable deposits of anthracite coal.

**BEAR RIVER,** a river in Utah about 400 miles long, which rises in a spur of the Rocky Mountains, about 75 miles east of Great Salt Lake, takes first a northwesterly and then a southeasterly direction, forming nearly a letter V, of which more than half the entire length is in Oregon State, and finally empties into the Great Salt Lake. Its valley is about 6,000 feet above the sea-level. At the bend of the river in Oregon, and about 45 miles from Lewis River, are found the famous Beer and Steamboat springs, which are highly impregnated with magnesia and other mineral substances; also a geological formation in the vicinity, of Lower Cretaceous (q.v.) age, which carries some coal.

**BEAR STATE.** A popular nickname for Arkansas.

**BEARBERRY,** the name applied to the species of *Arctostaphylos,* a genus of plants belonging to the family *Ericaceæ.* It includes the two species, *A. uva-ursi* and *A. alpina,* both of which are American. The flowers are rose-colored, the berry of the *uva-ursi* is red, while that of the other is black. The manzanita of California is *A. manzanita* or *A. pungens.* It

reaches a height of 30 feet, and forms dense thickets, impenetrable by man or cattle. By reason of an active glycoside, arbutin, bearberry is a very efficient urinary antiseptic, useful in cystitis, pyelitis and urethritis. The arbutin is decomposed in the urine into hydrochinon and other bodies. Its antiseptic properties are due to the phenol hydrochinon. The extract of the plant is used for dyeing and tanning leather.

**BEARD, Daniel Carter,** American artist and author: b. Cincinnati, Ohio, 21 June 1850. He received his academic education at Covington, Ky., and went to New York in 1878. He studied at the Art Students' League, New York, 1880–84; and made illustrations for *Harpers', Century, Scribner's, Life,* books (of which the most notable is Mark Twain's 'Connecticut Yankee'), etc. He was originator and instructor of the pioneer class in illustration and teacher of animal drawing in the Woman's School of Applied Design, 1893–1900, believed to be the first organized class in animal drawing in the world. He was editor of *Recreation,* 1905–06; became a member of the Flushing board of education and of the Queens Borough library board; vice-president of the Mark Twain Library, of Redding, Conn.; member of several zoological societies; president of the Society of Illustrators; president of the Camp Fire Club of America; national scout commissioner of the Boy Scouts of America. An enthusiast in outdoor life he was the originator and founder of the first boy scout society, from which the English scouts and others were modeled, and became chief scout of the department of woodcraft, Culver (Ind.) Military Academy. Mount Beard, the peak adjoining Mount McKinley, discovered by the Browne and Parker expedition, was named after him. He also founded the Dan Beard Outdoor Scout School, with headquarters at Flushing, L. I. Besides his illustrative work he has published 'American Boys' Handy Book' (1882); 'Moonlight and Six Feet of Romance' (1890); 'Outdoor Handy Book' (1900); 'Jack of All Trades' (1900); 'Field and Forest Handy Book' (1906); 'New Ideas for Out of Doors' (1906); 'Dan Beard's Animal Book' (1907); 'Boy Pioneers and Sons of Daniel Boone' (1909); 'The Buckskin Book and Buckskin Calendar' (1911); 'Boat Building and Boating' (1911); 'Shelters, Shacks and Shanties' (1914); 'Handicraft and Recreation for Girls'; 'What a Girl Can Make and Do'; 'The American Girls' Handy Book'; 'Things Worth Doing and How to Do Them.'

**BEARD, James Henry,** American painter: b. Buffalo, N. Y., 1814; d. 4 April 1893. He became a portrait painter in Cincinnati, and painted portraits of Henry Clay and other distinguished men. In 1846 he exhibited his 'Carolina Emigrants' at the National Academy in New York, of which he was elected an honorary member in 1848. In 1870 he removed to New York, and in 1872 was elected a full member of the National Academy. Subsequently he devoted himself to animal painting. Among his better known works are 'Mutual Friend' (1875); 'Consultation' (1877); 'Blood Will Tell' (1877); 'Don Quixote and Sancho Panza' (1878); 'Heirs at Law' (1880); 'Which Has Pre-emption?' (1881); 'Detected Poacher' (1884); 'Don't You Come Here' and 'The Mississippi Flood' (1885); 'A Barnyard' and 'Ll Yer Gimme Some? Say!' (1886).

**BEARD, Richard,** American theologian: b. Sumner County, Tenn., 27 Nov. 1799; d. Lebanon, Tenn., 2 Dec. 1880. He was graduated from Cumberland College, Princeton, Ky., in 1832; was professor of languages there, 1832–38; president 1843–53. In 1854 he was called to the chair of systematic theology in Cumberland University, Lebanon, Tenn., a position held until his death. He was one of the ablest scholars and most conspicuous figures in the Cumberland Presbyterian Church. He published 'Why I Am a Cumberland Presbyterian' (1874); 'Systematic Theology,' a standard work regarded as the crystallization of the Cumberland Presbyterian form of thought and faith.

**BEARD, Thomas Francis,** commonly known as FRANK BEARD, American artist: b. Cincinnati, 6 Feb. 1842; d. 1905. During the Civil War he served in the 7th Ohio regiment, and acted as a special artist for the Harper publications. As an artist he devoted himself especially to character sketches. From the age of 12 he contributed pictures to the leading American magazines. As a lecturer he had great success before Chautauqua and other audiences. He accompanied his talks by crayon sketches on a blackboard. The title of his first lecture was "Chalk-Talk," whence the word originated. In 1881 he occupied the chair of æsthetics at Syracuse University. He published 'The Blackboard in the Sunday-school' (1880); and a number of short stories.

**BEARD, William Holbrook,** American painter: b. Painesville, Ohio, 13 April 1825; d. New York, 20 Feb. 1900; brother of James H. Beard. He was a traveling portrait painter from 1846 till 1851, when he settled in Buffalo, N. Y. After several years of foreign study and travel he settled in New York in 1860. In 1862 he was elected a member of the National Academy. His works include genre and allegorical pictures, but he was most popular in painting animals, especially bears, whose actions he humanized in a satirical and pleasing manner. He made many studies of decorative architecture. Among his most popular works are 'Power of Death' (1859); 'Bears on a Bender' (1862); 'Bear Dance' (1865); 'March of Silenus' (1866); 'Flaw in the Title' (1867); 'Darwin Expounding his Theories' and 'Runaway Match' (1876); 'Divorce Court' (1877); 'Bulls and Bears in Wall Street' (1879); 'Voices of the Night' (1880); 'Spreading the Alarm' (1881); 'In the Glen' (1882); 'Cattle Upon a Thousand Hills' (1883); 'Who's Afraid?' (1884); 'His Majesty Receives' and 'Office Seekers' (1886), etc. He published 'Humor in Animals,' a collection of his sketches (1885).

**BEARD,** the hair on the chin, cheeks and upper lip of men. It differs from the hair on the head by its greater hardness and its form. The beard begins to grow at the time of puberty. The connection between the beard and puberty is evident from this, among other circumstances, that it never grows in the case of eunuchs who have been such from childhood; but the castration of adults does not cause the loss of the beard. According to Cæsar, the Germans thought, and perhaps justly, the late

growth of the beard favorable to the development of all the powers. But there are cases in which this circumstance is an indication of feebleness. It frequently takes place in men of tender constitution, whose pale color indicates little power. The beards of different nations afford an interesting study. Some have hardly any, others a great profusion. The latter generally consider it as a great ornament; the former pluck it out; as, for instance, the American Indians. The character of the beard differs with that of the individual, and, in the case of nations, varies with the climate, food, etc. Thus the beard is generally dark, dry, hard and thin in irritable persons of full age; the same is the case with the inhabitants of hot and dry countries, as the Arabians, Ethiopians, East Indians, Italians, Spaniards. But persons of very mild disposition have a light-colored, thick and slightly curling beard; the same is the case with inhabitants of cold and humid countries, as Holland, Britain, Sweden. The difference of circumstances causes all shades of variety. The nature of the nourishment likewise causes a great variety in the beard. Wholesome, nutritious and digestible food makes the beard soft; but poor, dry and indigestible food renders it hard and bristly.

In general the beard has been considered with all nations as an ornament and often as a mark of the sage and the priest. Moses forbade the Jews to shave their beards. With the ancient Germans the cutting off another's beard was a high offense: with the East Indians it is severely punished. Even now the beard is regarded as a mark of great dignity among many nations in the East, as the Turks. The custom of shaving is said to have come into use in modern times during the reigns of Louis XIII and XIV of France, both of whom ascended the throne without a beard. Courtiers and inhabitants of cities then began to shave, in order to look like the king, and as France soon took the lead in all matters of fashion on the Continent of Europe, shaving became general; but it was only from the beginning of the 18th century that shaving off the whole beard became common.

The English clergy by and by, probably in imitation of those of western Europe, began to shave the beard and until the time of William the Norman, the whole of whose army shaved the beard, there prevailed a bearded class and a shaven class, in short, a laity and a clergy, in England. In forbidding the clergy to wear beards Gregory VII (1084) appealed to the custom of antiquity. The higher classes indulged in the moustache, or the entire beard, from the reign of Edward III down to the 17th century. The beard then gradually declined and the court of Charles I was the last in which even a small one was cherished. Shaving, among many ancient nations, was the mark of mourning; with others it was the contrary. Plutarch says that Alexander introduced shaving among the Greeks by ordering his soldiers to cut off their beards; but it appears that this custom had prevailed before among the Macedonians. The Romans began to shave about 296 B.C., when a certain Ticinius Mena, a barber from Sicily, introduced this fashion. Scipio Africanus was the first who shaved every day. The day that a young man first shaved was celebrated and the first hair cut off was sacrificed to a deity. Hadrian, in order to cover some large warts on his chin, renewed the fashion of long beards; but it did not last long. In mourning the Romans wore a long beard, sometimes for years. They used scissors, razors, tweezers, etc., to remove the beard. The public barbers' shops (*tonstrinæ*), where the lower classes went, were much resorted to; rich people kept a shaver (*tonsor*) among their slaves. Army regulations generally prohibit the wearing of beards, while in the navy beards are permitted. Physicians suggest that the beard should be suffered to grow on the chin and throat where tendencies to throat disease exist.

**BEARD MOSS** (*usnea barbata*), a lichen of gray color. See also USNEA.

**BEARDSLEE, Lester Anthony,** American naval officer: b. Little Falls, N. Y., 1 Feb. 1838; d. near Augusta, Ga., 11 Nov. 1903. Appointed acting-midshipman 5 March 1850, he served in the East Indies in 1851–55, participating in one battle and several skirmishes with the Chinese army at Shanghai. Graduating from the Naval Academy 1856, he passed through all grades of the service to rear-admiral 1895 and retired 1 Feb. 1898. During the Civil War he commanded the monitor *Nantucket* in the attack of the ironclad fleet on the defenses of Charleston Harbor, 7 April 1863, and captured the Confederate steamer *Florida* at Bahia, Brazil. In 1870 he took the steam-tug *Palos* to the East Indies, carrying on her the first United States flag through the Suez Canal. In 1879–80 he discovered, surveyed and named Glacier Bay, Alaska. He was the author of a number of valuable official reports, especially those on 'The Strength of Metals,' 'Resources of Alaska' and 'Present Condition of Affairs in Hawaii' (1897), published as Senate executive documents; 'The Strength of Wrought Iron and Chain Cables' (1880).

**BEARDSLEY, Aubrey Vincent,** English illustrator: b. Brighton, 8 Aug. 1872; d. Mentone, France, 16 March 1898. He was very precocious, drew at four and sold his copied compositions at 11. At the age of 15 he had produced a sketchbook of marked originality. He received no special instruction in drawing, but studied prints and drawings in the British Museum. He was possessed also of extraordinary musical talent and was partial to Wagner. After leaving school he was placed in an architect's office, which ill-health soon obliged him to leave and accept a clerical position. At this time he was befriended by Burne-Jones who gained him admission to the Westminster Art School. He remained there but a few months. In 1892 he began his illustration of 'Le Mort d'Arthur.' These, in the pre-Raphaelite style, were followed by others which showed Japanese and French Rococo influences. In 1894–95 he was art editor of the *Yellow Book*, in which appeared some of his best work. About this time he illustrated the 'Bon Mot Library'; the 'Pall Mall Budget,' and Oscar Wilde's 'Salome.' In 1896 he illustrated the 'Rape of the Lock,' and 'Lysistrata.' To this year also belongs the famous frontispiece, 'Volpone,' considered one of the world's greatest pen drawings. Beardsley contracted tuberculosis, embraced the Roman Catholic

faith at Bournemouth in 1897, and visited France in the following year where he died.

Beardsley's style was original and unique in several respects. He ranks high among the illustrators of his time because of his remarkable execution, conception and line mastery. Collections of his drawings have been issued under the titles 'Book of Fifty Drawings by Aubrey Beardsley,' text by Aymer Vallance (1897); 'Second Book of Fifty Drawings' (1899); 'The Early Work of Aubrey Beardsley' (1899); 'The Late Work of Aubrey Beardsley' (1901). Letters and poems, etc., in 'Under the Hill' (1904). Consult the biographies by Robert Ross (1908) and Arthur Symonds (1905).

**BEARDSLEY, John Davis,** American soldier and railway official: b. Woodstock, N. B., 1 Jan. 1837. He engaged in mercantile and lumbering pursuits at Grand Falls. At the outbreak of the Civil War in 1861 he left his lumber mill on the Saint John River to his partner, entered the Maine volunteers and was soon made first lieutenant of the 10th Maine volunteers. He was employed to guard the railroad from Baltimore and Harper's Ferry, was present at the battles of Winchester and Cedar Mountain, being taken prisoner at the latter. After three months in Libby Prison he was exchanged. He was present at Chancellorsville and at Gettysburg and in the fall of 1863 was sent to Tennessee. He was transferred to the 29th Maine, who were soon dispatched by sea from New Orleans to Fortress Monroe to reinforce Grant on the Potomac. The destination was changed to Washington and they were up in time to help in repulsing the Confederate general, Early, from the outskirts of the capital. He was next with Sheridan's corps in the Valley campaign, was promoted major in the 109th regiment in 1864. He resigned in March 1865 to raise a regiment of sharpshooters but before it could be effected the collapse of the Confederacy occurred. In 1897 he was appointed by the governor of Maine a commissioner for the erection of monuments at Gettysburg in commemoration of the soldiers of Maine who fell there. After the war he went into business at Richmond, Va., where he continued until 1873, removing thence to Cairo, W. Va. In 1878 he went to Arkansas, where he built a narrow-gauge railroad from Hope to Washington, Ark. In 1882 he changed the gauge of the road and extended it to Nashville. It is known as the Arkansas and Louisiana Railroad. Beardsley sold it to Jay Gould in 1886 and in 1887 began the construction of the Louisiana and Northwest Railroad from Magnolia, Ark., to Natchitoches, La. This road was sold to a syndicate in 1905. Following this he built an electric system, a light and power plant, an ice plant and an amusement park at Mineral Wells, Tex.

**BEARDSLEY, Samuel,** American jurist: b. Hoosick, N. Y., 9 Feb. 1790; d. Utica, N. Y., 6 May 1860. On leaving the common school he took up the study of medicine, but abandoned it for law. In 1813 he was a member of the militia that defended Sackett's Harbor. Two years later he was admitted to the bar and became judge-advocate of the militia. In 1823 he was State senator from the fifth district of New York. He was appointed attorney for the northern district of New York by President Jackson and was a member of Congress in 1831–36 and 1843–45. From 1836 to 1838 he was attorney-general of the State of New York. He became associate judge of the Supreme Court of New York in 1844 and three years later succeeded Judge Bronson as chief justice. On his retirement he devoted himself to the practice of his profession.

**BEARDSTOWN,** Ill., city in Cass County, 45 miles northwest of Springfield, on the Illinois River and on the Saint Louis division of the Burlington Railroad which has its repair and other shops at Beardstown. There are manufactures of flour, lumber and window screens as well as important cooperage works, fishing and ice-packing industries. The city has a fine park, two great bridges across the river, municipal waterworks, a Carnegie library, and its city hall is the former courthouse in which in 1854 Abraham Lincoln won the Armstrong murder trial. Named after Thomas Beard, who first settled here in 1820, Beardstown was plotted in 1827 and in 1832 was a base oof war supplies for the Black Hawk expedition against the Indians. It received a city charter in 1896. Pop. (1910) 6,107.

**BEARING,** *in navigation and surveying,* signifies the angle made by any given line with a north and south line. The bearing of an object is the direction of a line from the observer to that object.

*In architecture,* the space between the two fixed extremities of a piece of timber, or between one of the extremities and a post or wall placed so as to diminish the unsupported length. Also and commonly used for the distance or length which the ends of a piece of timber lie upon, or are inserted into, the walls of piers.

*In mechanics,* (a) The portion of an axle or shaft in contact with the collar or boxing. (b) The portion of the support on which a gudgeon rests and revolves. (c) One of the pieces resting on the axle and supporting the framework of a carriage. (d) One of the chairs supporting the framework of a railway carriage or truck.

*In heraldry,* a charge; anything included within the escutcheon. Generally in the plural, as armorial bearings.

**BEARINGS, Anti-friction.** Anti-friction bearings are bearings involving the principle of rolling friction, as distinguished from sliding friction. An ordinary shaft turning in a plain journal slides around on a layer of some lubricating substance. If the lubricant is good and properly applied, little energy or power is lost in the heat produced by rubbing friction. If not, then much heat is produced, often to such an extent that the oil or grease is set on fire, dried up, thereby causing a so-called "hot box" or journal. The starting friction of a plain journal differs very greatly from the friction of motion. The reason is that while at rest under a heavy load, the film of the lubricant is penetrated, and contact of metal with metal is established. To overcome this contact, until the bearing has moved far enough to drag the film of oil between the points of contact again, requires much more power. Careful tests show the coefficient of rest to be from .09 to .13 as compared with .05 to .08 for the co-

efficient of motion. Bearings involving rolling friction are entirely different in this respect. Slight lubrication, largely to prevent rusting, is needed. Between the shaft and the wheel or other bearing is interposed either a series of balls or rollers of hardened metal, usually steel, or a steel alloy, arranged to revolve between the two surfaces.

Ball bearings came into general use with the advent of the modern bicycle; they have been highly developed in automobile practice, and have come into general use in light machinery to reduce friction, being markedly superior to plain bearings, especially in case of starting. The balls are made in a great number of sizes, and positioned in bearings in numerous ways. Since small pieces of metal heat and cool rapidly, it is a difficult matter to temper steel balls exactly as desired. To have a long life each ball must be uniformly hardened as deeply as possible. Much ingenuity has been displayed in securing accurate tempering, and an exceedingly good average of balls are marketed at surprisingly low cost. In addition to hardness, uniformity of size and surface polish are essential. The only way to know precisely what is the structure and strength of a particular ball is to break it up. However, by microphotography experts are able to judge very accurately the character of balls.

It is apparent that a series of balls, traveling in a circular raceway in a machinery bearing must occasionally strike each other, jam and rub the surfaces in contact in opposite directions. Except for this, sliding friction is wholly eliminated in a properly designed ball bearing, and the balls simply roll on the surfaces. To produce a good bearing it is essential that the balls shall be as nearly perfect as can be, and in practice good balls will show variations of only 1-10,000 of an inch in diameter. If the balls in a bearing vary in size, the larger balls must bear nearly all the strains and the sooner crystallize and break. The surfaces against which the balls bear are sometimes flat, but usually at least one surface must be curved to keep the balls in position; often both surfaces are curved. The radius of curvature of the raceway against which the balls bear must always be less than the curvature of the ball, else there will be sliding friction. The less number of balls there are in a bearing the less will be the number of contact points, and the less the friction. But if there is a heavy load to carry, it is necessary to have many balls, and thus distribute the load. It has been demonstrated that the speed of rotation has little effect on the carrying capacity. Marked and numerous variations in speed and load, as in automobile use, reduce the carrying capacity of a ball bearing, hence they are designed with a large margin or surplus of strength. A good ball bearing will have a coefficient of friction of approximately 0.0015.

Ball bearings are made to carry ordinary load or side-friction, to resist end-thrust of a shaft, and sometimes for angular load, the positioning of the bearing surfaces determining how they operate. In designing a ball bearing, the engineer must consider the load or stress to be placed on it constantly, and also in exceptional instances; he must also bear in mind the different speeds of rotation to which it will be subject. If it is a bearing on a vehicle axle, carrying a wheel, he will fix the inner raceway firmly to the axle, but mount the outer raceway loosely on the wheel with a «slip-fit.» By properly shaping his raceway he can make the bearing carry the end-thrust of the axle as well as the supported load.

Designs of ball bearings have been made with alternate small idle balls between the larger working balls, with a view to reducing back rotation or jamming, but these have not been widely adopted. Another arrangement is to stagger the balls — that is arrange them this way: o o o o o o. This is accomplished by building parallel raceways that slightly impinge. There are some advantages in such a construction.

For heavy loads roller bearings are superior to ball bearings. Hardened steel rollers of uniform size are mounted in a cylindrical case, that positions them so that they are kept slightly apart. They may then be introduced into the journal box by slipping over the shaft. By extending the length of the journal box, and using a sufficient number of rollers, almost any load can be carried with a minimum of friction. A 24-inch diameter shaft, provided with a 36-inch journal-box, carrying 38 one-and-a-half inch rolls, was made to carry a load of 575,000 pounds. Since 1900 the use of roller bearings has become very common. Both ball bearings and roller bearings require lubrication, though very much less than plain bearings need. It is a mistake to suppose that they can be run absolutely without oil. It is very necessary that such bearings be kept free from grit or dirt, as these will cut the balls or rollers in a short time.

Other anti-friction bearings are made by the use of anti-friction metals, that is, soft alloys, as babbitt metal, which is placed in the bearing to carry the steel or iron shaft.

**BÉARN**, bā-ārn, a former province of France, at the foot of the Pyrenees, with the title of a principality; about 42 miles long and 36 broad. It now forms part of the department of the Basses-Pyrénées. It belonged, with Navarre, to Henry IV, when he obtained the crown. The plain country is very fertile, and the mountains are covered with fir trees, while within are mines of copper, lead and iron, and the little hills are planted with vines, which yield good wine. Pau is the chief town. There is a peculiar and well-marked dialect,— the Béarnese,— spoken in this district, which has much more affinity with the Spanish than with the French. It contains a certain number of Greek elements, which some believe to have been derived from the ancient Greek colonists established in Gaul. The people have retained many Old World manners, customs and superstitions, as well as their old costume. Consult Bordenare, 'Histoire de Béarn et Navarre' (1873).

**BEARS**, a family (*Ursidæ*) of large, heavy, long-haired, plantigrade, carnivorous mammals, scattered throughout all the northern hemisphere and some parts of the tropics. They are absent from Africa (except the Atlas Mountains, which zoologically belong to Europe) and from Australasia. In their structure and dentition they are allied to the dogs on one hand, and to the badgers, weasels,

skunks, etc. (*Mustelidæ*), on the other. The head is broad, and the jaws extended and rather narrow, but not so powerful as those of dogs or hyenas; while the teeth are complete and large, the molars especially being broad and tuberculous, fitting them well for crushing the vegetable fare so largely eaten by this group. The skeleton is massive; the limbs are of great strength and furnished with long and powerful claws for digging and use in fighting. The whole sole of the foot rests upon the ground, leaving a footprint much resembling that of a man. Ordinarily they move about rather slowly and clumsily, yet all except the heaviest bears climb trees, and the largest scramble over rocks or ice with surprising agility; and all, when urged by rage or fear, can get over the ground at great speed, their gait being a lumbering but effective gallop. Their ears, though small, are highly developed, and their hearing is perhaps of more service to them than is their eye-sight; but neither equals in keenness the nose, which seems to be extremely sensitive. In respect to food, bears are truly omnivorous, taking flesh, fish or vegetable materials as circumstances favor. They seize such small animals of the woods as cannot avoid them, and near settlements raid the herds of swine and flocks of sheep and cattle, especially in search of the young ones. All bears eat fish, and some, like the Polar and the Kadiak bear, live almost wholly upon this diet, catching the fishes cleverly from the shore by a stroke of the paw, or going into the water after them. Reptiles, crabs, crayfish, etc., are eaten also; and insects form a large part of their fare, especially ants and honey-making bees and wasps. They dig up ant hills and overturn rotting logs and stumps for the former, and search out and tear to pieces the combs of the latter, well protected against stings by their long hair. They also eat succulent leaves and herbage, certain roots, fruit, and especially sweet acorns and berries, of which they are exceedingly fond. The Rocky Mountain Indians used to burn over certain tracts of mountain-side annually in order to keep the oaks low and promote the growth of certain berry-bearing bushes in order to attract the bears. They drink a great deal of water, enjoy going into it and will swim long distances.

Bears are nowhere very numerous, each pair or family occupying a district and keeping it fairly well to itself. When, as frequently happens, three or four are seen together, they are likely to be old and young of the same family. Their home is usually some cave or crevice among rocks, a hollow tree, a tangle of wind-thrown logs or a dense thicket. There, in the early spring, are born the young, usually two, sometimes four; and in the case of the Arctic species, this often happens under the snow, before the female is released from her hibernation. The young remain with the mother until fully grown, and when they are little she guards and controls them with great solicitude and will rush at an intruder. At other times bears are rather shy and will usually endeavor to retreat, yet, when brought to bay, fight with great courage and are among the most dangerous animals man can encounter. Their attack is made with both teeth and claw, striking down or clasping the foe in a crushing embrace and then tearing him with the teeth. They can easily be tamed, however, remain friendly and prove intelligent and docile to a limited extent. They submit well to confinement, endure change of climate and breed readily in captivity. The close family likeness throughout the group has made their distinction into natural species a matter of much dispute and uncertainty. Everyone recognizes the great white "Polar" or "ice" bear of the Arctic region (*Ursus maritimus*) as distinct. Its elongated body, long, pointed head, slender limbs, large, hairy-soled feet, and cream-white coat are quite unlike the features of any other. Large specimens are nine feet or more in length and have enormous strength. These bears are numerous throughout the icy circumpolar regions, and wander a vast distance away from the coast on the ice, sometimes swimming many miles. They often winter and their young are born on the floes. They live mainly upon seals, young walruses and fish, which they scoop out of the surf and from the coast rivers where they come to breed, but in summer obtain various other kinds of food, including marine grass and shore herbage. The writings of Arctic explorers abound in accounts of this wide-spread species and should be read by those who wish to know more of their habits. Another sub-Arctic bear that seems undoubtedly distinct is the glacier or "blue" bear of the Mount Saint Elias Alps on the coast of Alaska, first described by Dall in 1895 and named *Ursus emmonsi*. It is the smallest of all bears — not larger than a half-grown grizzly, and bluish-black, with a dorsal stripe, the ears and the outer surfaces of the limbs jet black; black and silver is the prevalent color of the sides, neck and rump; the belly and inside of the legs are white; sides of the nose bright tan color. Very little is known of its habits or of the extent of its limited range.

The other American bears, called black, grizzly, cinnamon, Barren-Ground, brown, Kadiak, and so on, are so confusingly alike that some conservative naturalists regard them all as merely varieties of one species, altered by climate and food and a tendency to individual variation; and it has even been said that there was no real specific distinction between them and the Old World bears, which also present differences that blend confusingly together when many specimens are compared. Others regard the differences as not only of specific value, but place some of the forms in separate genera. The latest monographer of the American *Ursidæ* recognizes no less than eight species on this continent, besides the Polar bear and the spectacled bear of the Andes (*Ursus ornatus*), which is thought by others to be merely an isolated variety of the black bear that somehow has acquired whitish rings around its eyes. The black bear (*Ursus Americanus*) is the most wide-spread of these, being found in all the forested regions of the continent north of Mexico and still remaining wherever a large patch of forest or a range of mountains or rough hills give it a harbor, whence it may raid the pasture-lots and pig sties of frontier farmers, especially in early spring when wild food is scarce. Black bears climb trees easily, travel about a great deal and are often captured and tamed. They are timid and

# BEARS

1 American Black Bear (Ursus Americanus)
2 Brown Bear (Ursus arctos)
3 Black Bear of the Himalayan Mountains (Ursus torquatus)
4 Malay Bear (Ursus Malayanus)

secretive, and rarely are dangerous unless wounded or cornered and enraged. The color of this bear is properly black, but brown, reddish ("cinnamon") or even yellowish examples are frequently seen. The nose is always tan-colored. In size they average about five feet and never reach the dimensions of a large grizzly. The bears of Florida and of Texas are each regarded by some as separate species, but most naturalists consider them to be merely geographical races. The Barren-Ground bear (*Ursus richardsoni*) is a large, whitish-brown species dwelling on the brushy plains northwest of Hudson Bay, which there is good reason to believe is an isolated American race of the European brown bear.

The grizzly bear (*Ursus horribilis*) of the mountains of western North America is one of the largest, and perhaps the most to be feared, of any of the family. It is found from the Black Hills and the Badlands of Dakota westward to the Pacific coast, and from Mexico to northern Alaska. A large specimen is nine feet in length and will weigh 1,000 pounds, but the size varies greatly. So does the color, which ranges from reddish-brown to hoary gray. Hence several varieties are recognized by hunters, such as "cinnamons," "silver-tips" (in which the tips of the hairs are white) and "grizzlies." The typical form may be described as yellowish-brown, with a reddish mane, black dorsal stripe and dark-colored legs. In form they are massive, with broad, squarish heads and immensely muscular bodies. They cannot, or, at any rate, do not, climb trees, but they scramble about the roughest mountains or through a dense forest with surprising agility and can run very rapidly on occasions. They seem rarely, if ever, to hibernate and go about alone or in pairs, eating all sorts of food, but seizing and pulling down large prey when an opportunity offers. In former days even a bull buffalo was unable always to resist their strength and they constantly attacked them and the deer. At present the cattle and horses upon the ranges in some parts of the West suffer from their ravages. Though so mighty, and when at bay or enraged probably not less dangerous to encounter than a lion or tiger, they will usually avoid and flee from man and do not seem quarrelsome, the tradition of a constant enmity between them and the black bears not finding support in facts. The grizzly is easily the most terrible of the game animals of North America and one of the most formidable in the world; but different bears vary greatly in temperament and according to circumstances. The Indians and experienced hunters of the West, however, have learned to hold all of the race in the highest respect. Much the same statement will apply to the Barren-Ground bear, already mentioned, and to the Alaskan bears to be spoken of presently. The grizzly is still to be found throughout most of its range, though no longer numerous except in the wilder parts of the Rocky Mountains, in the northern parts of the Sierra Nevada and in the high mountains northward from Oregon to Alaska, where the largest ones are now to be obtained. The Kadiak bear is a brownish species or variety (*Ursus middendorffi*) dwelling on Kadiak Island, Alaska, and the neighboring mainland. Specimens of it exceeding in size any other bear have been obtained, and weighing 1,200 pounds. Whether it will prove to be a distinct species remains to be seen. The same may be said of Dalli or the Sitka bear (*Ursus dalli*). Both are dark brown or grizzled and difficult to distinguish externally from other bears of the north.

The bears of the Old World have been divided into many species by earlier naturalists, but are now regarded as more nearly connected. The best known is the common brown bear of Europe and Asia (*Ursus arctos*). It is of large size, reaching about eight feet in length in the bigger European specimens, and is usually of some shade of yellowish-brown, reddish-brown or black but varies greatly. It is exceedingly difficult to distinguish from the American bears and passes by indeterminate variation into the so-called species of Siberia, Japan and the Himalayan region, the differences being such as might come from varying climate and habitat; thus those of the high Himalaya are smaller and lighter in color, etc. Although long ago extinct in Great Britain, it still lingers in the wilder, more mountainous parts of Europe and is numerous in the forests of Russia, the Caucasus, on the Lebanon range of Asia Minor (where it is called the Syrian bear), in the Atlas Mountains of Morocco and throughout Asia north of the Himalayas. The largest are those of Kamchatka, where they are numerous and bold and live in summer almost wholly on salmon, as do the Kadiak and other Alaskan bears east of Bering Sea. This is the bear most often seen in menageries, where it breeds readily, and is also led about by "bear-tamers" and taught certain clumsy "dancing" tricks. The Tibetan or "blue" bear (*Ursus pruinosus*) is a little-known species regarded as distinct. Two other quite distinct species of bear belong to the Indo-Malayan region. One is the sloth-bear or honey-bear of India, a large animal which in its jungle home is one of the most dangerous carnivores of the Indian forests, yet is often tamed and led about the country by Hindu jugglers, who called it "aswail," etc. It is black, unusually shaggy and has a prolonged mobile snout, a very long tongue and no teeth in the front of the mouth (after the milk teeth drop out), making its facial grimaces very comical. Another very distinctive feature is the large yellowish crescent on its breast. It is an agile climber and exceedingly fond of robbing the nests of honey-making bees. These facts are recorded in its name (*Ursus* or *Melursus*) *labiatus*.

The Malayan sun bear, or "bruang" (*Ursus*, or *Helarctos, Malayanus*), is a smaller species inhabiting the forests of the Malayan Peninsula and islands eastward to Borneo. Its coat is short and fine, black in color, marked on the breast with a white or orange crescent, and the lips and tongue are remarkably long and flexible. It feeds mainly on ants, which it gathers with its glutinous tongue after digging up their hills, for which its long claws are well fitted.

Fossil bears, commonly called "cave bears," have been found in the Quaternary bone-breccia of many caves of Europe, North and South America. Some are closely allied to or identical with living species; others, as the California and South American cave bears, are referred to a distinct genus, *Arctotherium*. In

the Tertiary strata of the Old World occur remains of a series of animals (*Amphicyon, Hyænarctos,* etc.) which appear to connect the bears with primitive *Canidæ,* indicating that they are an offshoot of the dog family. See also CAVE BEARS.

**Bibliography.**— Consult, in addition to general works mentioned under MAMMALS and the writings of sportsmen-travelers, Osgood, 'North American Fauna' (No. 24 [Alaska] Washington 1904); Preble, N. A., 'Fauna' (No. 27 [Athabaska, Mackenzie region] Washington 1908); Seton, 'Northern Mammals' (New York 1909); Wright, 'The Grizzly Bear' (New York 1909); Wright, 'The Black Bear' (New York 1910).

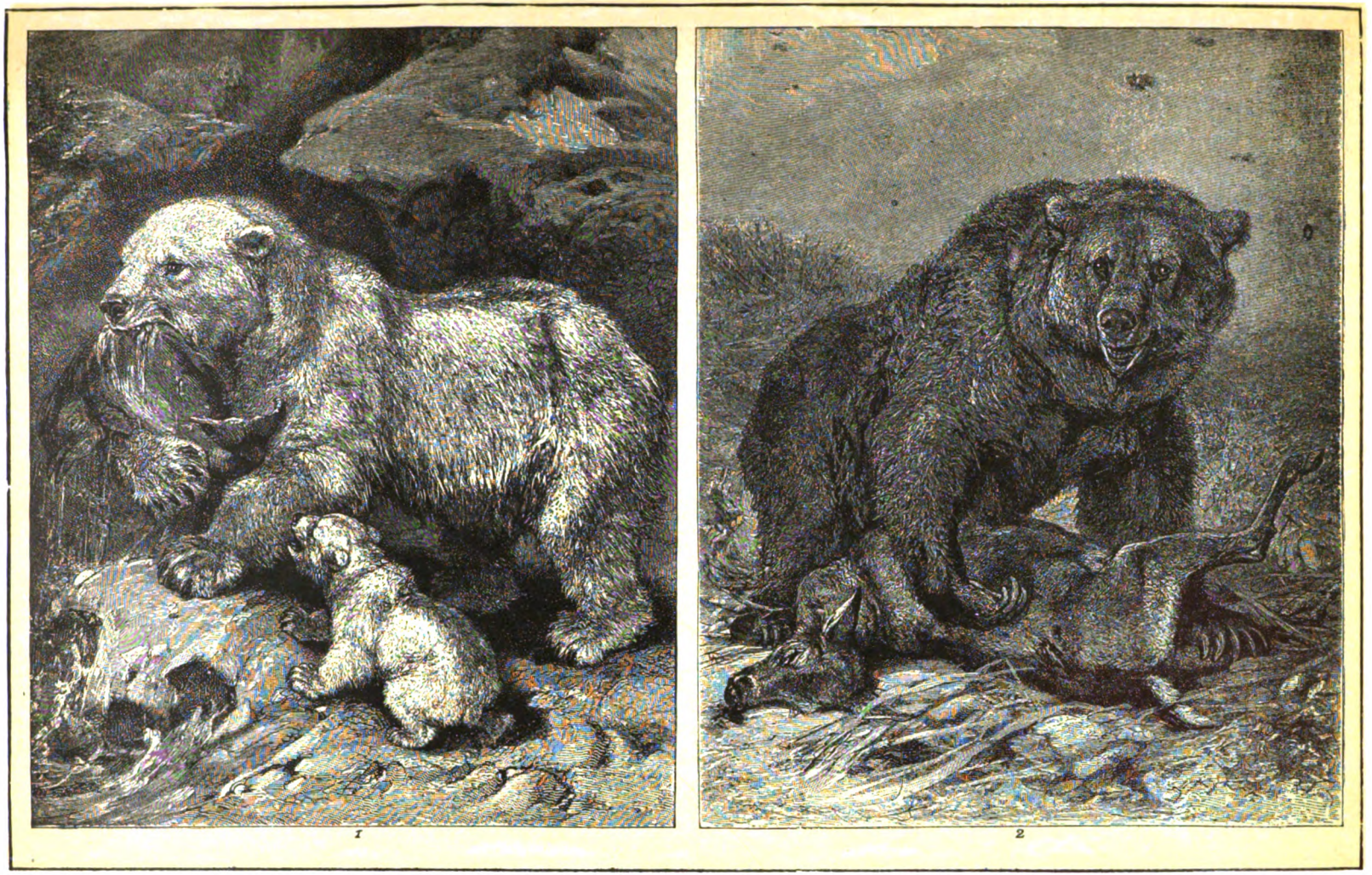
**BEAS,** bē'ąs, or **BIAS** (the ancient *Hyphasis*), one of the five great rivers of the Punjab, having its rise at the Ratanki Pass, on the south side of the Santch Mountains, a branch of the Himalaya system, in lat. 32° 21′ N., long. 77° 22′ E.; where the former attain an elevation of 13,300 feet. Its entire course is about 290 miles. The Beas has been considered larger than the Sutlej, which it joins 35 miles to the southeast of Amritsar, but it is greatly inferior to that river in the length of its course; and, though they have about the same breadth, the Sutlej has the greater volume of water. The united stream, below the point of junction, is called the Ghara or Gharra.

**BEASTS OF PREY,** is not a scientific term, but, as in the case of the phrase "birds of prey," represents merely the idea of an assemblage of such mammals as prey upon other creatures. The greatest number and most prominent examples belong to the order *Carnivora,* whose members subsist mainly upon flesh, and some of which, as the cats, bears and wolves, are the most powerful, deadly and dangerous animals of the world. These have acquired bodies with great strength and endurance in chasing and leaping, seizing and holding; teeth adapted to cutting and piercing; sharp, muscular claws, and a high degree of intelligence in the wiles of hunting and of courage and pertinacity in attacking their prey or defending their gains against rivals. Their digestive organs are simplified and adapted to the assimilation of flesh, of which a less quantity is required than in the case of an animal subsisting on vegetable fare, because it is already in a concentrated, partly elaborated form; but as the obtaining of it is occasional and often interrupted by long intervals, all beasts of prey are likely to kill and eat excessively when opportunity offers, in instinctive preparation for a possible fast. To provide against the loss of heat during the periods of famine, rather than as a provision against low temperature, most beasts of prey are clothed in dense, hairy coats of hair, or "fur." Not all the beasts of prey belong to the *Carnivora,* for animals with similar structures and adaptations are to be found in other orders of mammals whose basal structure is very different. The blood-sucking bats, for example, have teeth roughly similar to those of a dog, and some of the apes are savage and powerful and have carnassial teeth. The most precise parallel, however, is found in the predatory marsupials of Australia, such as the Zebra wolf, Tasmanian devil and several others, which have the equipment and habits of true beasts of prey.

**BEAT,** in music, the beating or pulsation resulting from the joint vibrations of two sounds of the same strength, and all but in unison. Also a short shake or transient grace-note struck immediately before the note it is intended to ornament. The Greeks employed the up beat (*arsis*) to denote the accented, and the down beat (*thesis*) to signify the unaccented part of the measure, but in modern practice the down beat denotes the accented and the up beat the unaccented.

**BEATIFIC VISION,** the immediate knowledge of God enjoyed by the angelic spirits and the souls of those who have attained heaven. It is distinguished from the temporal knowledge of God, which the human mind may attain on earth, in that it implies also a visual knowledge. Since such direct knowledge constitutes perfect bliss, the vision is termed "beatific." Consult "Heaven" in 'Catholic Encyclopedia.'

**BEATIFICATION,** in the Roman Catholic Church, an act by which the Pope declares a person beatified, or blessed, after his death. It is sometimes the first step to canonization, or the raising of one to the honor and dignity of a saint. Beatification is said by some to have had its origin in the pagan apotheosis, but this is strongly denied by Roman Catholic authorities, who contend that it has its origin in the Catholic doctrine of the worship, invocation and intercession of the saints. In the earlier periods of the history of the Church the worship of saints was local, then was passed from one church to another by authority of the bishops. Two classes of persons were thus honored: martyrs and confessors. The first constituted those who had sacrificed their lives for the faith, while the second comprised those who had lived long lives of self-denial and Christian virtue. Toward the close of the 11th century the Pope found it necessary to restrict the power of the bishops in decreeing who should be held up for public veneration and worship, and ordered that such honors should not be accorded until they had been approved by a council of the Church. This practice was initiated by Urban II. In 1634 Urban VII published a bull which reserved to the Holy See the sole right of beatification. Beatification differs from canonization in that it constitutes only a permission to venerate a certain person, with restrictions to certain places and to certain liturgical exercises. Outside the boundaries of the places designated it is unlawful to pay reverence to the person beatified, or to celebrate mass with prayers referring to him unless special indult be had. Canonization is universal and also implies a precept. The process by which a person is beatified is long, sometimes requiring over a year. The postulator-general chooses a vice-postulator, whose function it is to promote judicial inquiries outside of Rome. The inquiries are instituted under the supervision of the local episcopal authorities. When completed the results of these inquiries are sent to the Congregation of Rites in Rome. The documents are then published, after which an advocate and a procurator of the cause, the latter being sometimes known by the title of "devil's advocate," are appointed



1 Polar Bear (Ursus maritimus)

2 Grizzly Bear (Ursus horribilis)

to prepare briefs for either side of the case. Thus the case passes through many stages attended by deliberations, until finally the Pope signs the degree of beatification and the ceremonies are performed in the Vatican. Consult Camillus Beccari's "Beatification" in the 'Catholic Encyclopedia.' See CANONIZATION.

**BEATING THE BOUNDS,** a periodical survey or perambulation by which the boundaries of parishes in England are preserved. It is still in some parts the custom that the clergyman of the parish, with the parochial officers and the boys of the parish school, should, on Ascension Day, march to the boundaries, which the boys struck with willow rods. A similar ceremony in Scotland is called riding the marches. In the New England colonies parallel duties were performed by "perambulators" and in Virginia by "processioners." The custom is of Teutonic origin.

**BEATITUDE,** the Christian term meaning the highest degree of happiness of which our nature is susceptible and applied particularly to the state of the elect in heaven. It was a favorite topic of discussion among the scholastic theologians, who divided it into subjective and objective, perfect and imperfect, and made our eternal happiness consist in the vision of God perfecting the intellect and will in possessing Supreme Truth and God. Recent theologians have generally made beatitude consist in honoring God and sharing his perfections, a sublime though indefinite conception. Though the state of beatitude be incomprehensible to us, yet the belief in it is a motive in the present life which begets heroism in the midst of misfortune, and an adherence to virtue in the midst of evils. The Beatitudes is the name given particularly to the nine clauses in Christ's Sermon on the Mount, each beginning "Blessed be."

**BEATON, David,** Scottish prelate and cardinal: b. 1494; d. Saint Andrews, 29 May 1546. He studied at Saint Andrews, Glasgow, and Paris, was given the abbacy of Arbroath in 1523 and became lord privy seal in 1528; was for years Scottish resident in France, and in 1537 was consecrated bishop of Mirepoix in that country. Pope Paul III raised him to the cardinalate in 1538, and next year he became primate of Scotland. He had much influence with James V, both of whose marriages he negotiated, and after his death (1542) produced an alleged will nominating himself with others regents of the kingdom, but it was set aside and Arran appointed regent; he then set himself to oppose the English party, to which the Reformers belonged. After the coronation of the infant (1543) Queen Mary, he was made chancellor and became also legate *a latere* from Rome. He took an active part in the repudiation of the treaty of marriage between Edward VI of England and the young Queen. He now began to renew the persecution of heretics (1546), which was political as well as religious, and among the rest the famous Protestant preacher George Wishart suffered, being strangled and burnt at the stake on the twofold charge of sedition and heresy. But a conspiracy had been formed against him and he was assassinated at his own castle of Saint Andrews, the main instrument in the deed being John Leslie, brother to the Earl of Rothes. He was a man of great ability, but cruel and of immoral life. Recent historical research has, however, somewhat modified the former severe judgments passed on his character.

**BEATRICE,** a witty, lively character in Shakespeare's 'Much Ado About Nothing,' who marries Benedick by the contrivance of the friends of each.

**BEATRICE,** Neb., city and county-seat of Gage County, picturesquely located in a fertile agricultural district in the valley of the Big Blue River and on several railroads, 40 miles south of Lincoln, the State capital. It is the seat of the State Institution for Feeble-Minded Youth; and has a handsome courthouse, United States government building, Holly system of waterworks, electric light and street railway plants, public library, three national banks, excellent water power, flour and planing mills, tile and barbed wire works, creamery, iron foundry and manufactures of gasoline engines, wind mills and farming implements. Beatrice was founded in 1857 when it became the county seat, was incorporated as a town, 1871, as a city, 1873, and received a new civic charter in 1901. The city is administered by the commission form of government. Pop. 9,356.

**BEATRICE CENCI,** bā-ą-trē'chā chĕn'chę, a 16th century Roman girl whose picture was painted by Guido Reni and whose career is the subject of Shelley's tragedy 'The Cenci.'

**BEATRICE PORTINARI,** bā-ą-trē'chā pōr-tę-nä're, the Beatrice of Dante's poems: b. about 1266; d. 1290. She was the daughter of a wealthy citizen of Florence, and wife of Simone de Bardi. She was but eight years of age, and Dante nine, when he met her first at the house of her father. He saw her only once or twice and she probably knew little of him. It is even doubtful whether they ever spoke to each other. The story of his love is recounted in the 'Vita Nuova,' which was mostly written after her death. In the "Divina Commedia" it is the spirit of Beatrice who conducts him through Paradise.

**BEATRIX, ANTELOPE,** an Arabian oryx (*Oryx beatrix*), resembling the beisa but without black markings on the haunches. See ORYX.

**BEATTIE,** bā'tę, **James,** Scotch poet: b. Kincardineshire, 25 Oct. 1735; d. Aberdeen, 18 Aug. 1803. He obtained a scholarship at Aberdeen and subsequently became assistant in the Aberdeen grammar school, and married the daughter of the head schoolmaster, Mary Dunn. After this event he began to be distinguished as a writer, and in 1771 commenced the publication of his work called the 'Minstrel.' This obtained for him the patronage of Lord Errol and caused him to be appointed professor of moral philosophy and logic in Marischal College. In 1765 he published a poem, the 'Judgment of Paris,' which failed of any celebrity. The work which gained him the greatest fame was an 'Essay on the Nature and Immutability of Truth,' in opposition to sophistry and skepticism. It was designed as a reply to Hume, and was so much in demand that in four years five large editions were sold; and it was translated into several languages. He was urged by the archbishop of York and the bishop of

London to take orders in the Church of England, a proposal which he declined. While in London he became intimate with Dr. Johnson, Dr. Porteus, Sir Joshua Reynolds, who painted his portrait, and other distinguished characters. In 1783 he published 'Dissertations, Moral and Critical,' and the 'Evidences of the Christian Religion,' written at the request of the bishop of London. In 1790 he published the first volume, and in 1793 the second, of his 'Elements of Moral Science'; subjoined to the latter was a dissertation against the slave trade. His two sons predeceased him and his wife became insane.

**BEATTY, Sir David,** K.C.B., M.V.O., D.S.O., British admiral: b. 1871. He entered the navy in 1884 and first saw active service on the Nile as a lieutenant under Kitchener in 1898, when he distinguished himself as second in command of the gunboat flotilla at the forcing of the dervishes' batteries at Hafir while exposed to heavy fire. His superior officer being wounded, Beatty took command and bombarded the enemy position at Dongola and dismounted their guns. He was mentioned in despatches and received the D.S.O.; and was again under fire in the battles of Atbara and Khartum. He was made commander and decorated by the Khedive. In the Boxer rebellion of 1900 he showed exceptional tenacity in endeavoring, with 200 blue-jackets, to capture two Chinese guns that were causing considerable trouble to the forces and inhabitants at Tientsin. Though twice wounded, he repeatedly led his men close up to the guns. He rose to captain in 1900, was made M.V.O. in 1905 and rear-admiral in 1910. In 1912 and 1913 he was naval secretary to the First Lord of the Admiralty, and in the latter year was placed in command of the First Battle Cruiser Squadron. The day before Great Britain declared war on Germany he was promoted acting vice-admiral. Beatty's first action against the navy created by von Tirpitz took place in the Bight of Heligoland in the morning of 28 Aug. 1914. German patrols had caused considerable damage to fishing craft in the North Sea and it was decided to undertake an offensive operation with a view to check the German raiders. The operation consisted of a scooping movement, by which submarines and destroyers entered the Bight and attracted the enemy's fire. The German light cruisers were drawn into the action, and at a prearranged period Beatty appeared on the scene with his battle cruisers and destroyed as many ships as were unable to escape under the land fortifications. Though about 60 British craft were engaged, only four were hit. The Germans lost three cruisers and two destroyers, while other vessels were damaged. The British casualties were 32 killed and 52 wounded; about 700 of the German crews perished and 300 were rescued and taken prisoners. On 24 Jan. 1915 Beatty fought an action in the North Sea off the Dogger Bank, in which the *Blücher* (German armored cruiser) was sunk and only two British vessels were hit. In the battle of Jutland Beatty engaged the German high sea fleet with his cruiser squadron in unequal combat in a desperate effort to hold up the enemy until the arrival of Sir John Jellicoe's grand fleet, then about 50 miles away (31 May–1 June 1916). Two of Beatty's battle cruisers, *Indefatigable* and *Queen Mary*, were sunk and he fought with eight capital ships against at least 19 of the combined fleets of von Hipper and von Scheer. On 29 Nov. 1917 Beatty was appointed commander of the grand fleet in succession to Admiral Jellicoe, who became First Sea Lord. See Jutland, Battle of.

**BEATTY, John,** American legislator: b. Bucks County, Pa., 10 Dec. 1749; d. Trenton, N. J., 30 May 1826. He was educated at Princeton and took up the study of medicine with Dr. Rush of Philadelphia. He fought with distinction through the Revolutionary War, reaching the rank of colonel; was delegate to the Continental Congress in 1783–85; speaker of the House; served in the convention which adopted the Federal Constitution; was a member of Congress in 1793–95; and secretary of State of New Jersey in 1795–1805.

**BEAU BRUMMEL.** See Brummel, George Bryan.

**BEAUCAIRE,** bō'cār', **Monsieur,** the principal figure in a story of the same name by Booth Tarkington (1900), dramatized 1901. Beaucaire is a French prince living incognito in the fashionable society of Bath, England, near the end of the 18th century.

**BEAUCAIRE,** France, small, well-built, commercial city, in the department of the Gard, on the Rhone opposite Tarascon, with which it communicates by a fine suspension bridge at the commencement of the Beaucaire and Aigues-Mortes Canal, and connected with several lines of railway. It has a commodious harbor for vessels which come up by a canal communicating with the Mediterranean, seven leagues distant, and thus avoid the sand banks at the mouth of the Rhone; considerable commerce and some manufactures; but is chiefly famous for its great fair (founded in 1217 by Raymond II, Count of Toulouse), held yearly from 21 to 28 July. In former days, when this fair was free from duties, it was attended by merchants from all parts of Europe, and even from the coast of Africa, with their goods; and almost every kind of article, however rare, was to be purchased here; though silks, woolens, printed cottons, leather, wool, wine, brandy, olive-oil and fruits were and are the chief objects of sale. The numerous imports demanded since 1632, foreign wars and the competition of Marseilles, Lyons and other large places have reduced the traffic of Beaucaire. Pop. about 9,000.

**BEAUCHAMP,** bō-shän, **Alphonse de,** French historian and publicist: b. Monaco 1767; d. Paris, 1 June 1832. Under the Directory he had the surveillance of the press, a position which supplied him with materials for his 'Histoire de La Vendée et des Chouans' (1806). He contributed to the *Moniteur* and the *Gazette de France*. Among his chief works are the 'History of the Conquest of Peru' (1807); the 'History of Brazil' (1815); and the 'Life of Louis XVIII' (1821); 'Life of Julius Cæsar' (1821). The 'Memoirs of Fouché' is also with reason ascribed to him.

**BEAUCHAMP,** bēch'ăm, **William Martin,** American clergyman and author: b. Coldenham, N. Y., 25 March 1830. Ordained in the Protestant Episcopal ministry in 1863, he filled rectorships at Northville, N. Y., 1863–65 and Baldwinsville, N. Y., 1865–1900. Since 1884 he

has been examining chaplain of the diocese of central New York. He is archæologist of the New York State Museum and member of the American Folk-Lore Society, president Syracuse Clericus, 1905–16, and president of the Onondaga Academy of Science, 1901–02. He made much valuable archæological research, particularly concerning the Iroquois Indians. He was detailed in 1889 by the United States Bureau of Ethnology to survey the Iroquois territory in New York and Canada, and prepared a map indicating the location of all the known Indian sites in that region. He has published 'The Iroquois Trail; or Foot-Prints of the Six Nations' (1892); 'Indian Names in New York' (1893); and a valuable series of archæological studies published as bulletins of the New York State Museum, namely, 'Aboriginal Chipped Stone Implements of New York' (1897); 'Polished Stone Articles used by the New York Aborigines (1897); 'Earthenware of the New York Aborigines (1898); 'Aboriginal Occupation of New York' (1900); 'Horn and Bone Implements of the New York Indians' (1902); 'Metallic Implements of the New York Indians' (1902); 'Metallic Ornaments of the New York State Indians' (1903); 'History of the New York Iroquois' (1905); 'Perch Lake Mounds' (1905); 'Aboriginal Use of Wood in New York' (1905); 'Civil, Religious and Mourning Councils and Ceremonies of Adoption' (1907); 'Past and Present Syracuse and Onondaga County' (1908); 'Revolutionary Soldiers of Onondaga County' (1912).

**BEAUCLERK**, bō'klärk, **Topham**, one of Dr. Johnson's favorite friends: b. December 1739; d. 11 March 1780. He was the only son of Lord Sidney Beauclerk, third son of the first Duke of Saint Albans, and in general appearance much resembled his great-grandfather, Charles II. He studied at Oxford, and his conversational talents so much charmed Johnson that when «The Club» was founded, in 1763, he was one of the nine members who originally formed it. When he went to Italy, in 1762, Johnson wrote to his friend Baretti, warmly commending Beauclerk to his kindness. In 1765 he accompanied Johnson on a visit to Cambridge. A short time before his death, Johnson said of him: «He is always ready to talk, and is never exhausted.» During his last illness, Johnson said he would «walk to the extent of the diameter of the earth to save Beauclerk»; and when communicating his death to Boswell, he said: «His wit and his folly, his acuteness and maliciousness, his merriment and reasoning, are now over. Such another will not often be found among mankind.» Consult Hill, 'Dr. Johnson: His Friends and His Critics' (1878).

**BEAUFORT**, bō-fôr, **François de Vendôme**, Duc de, French naval officer, grandson of Henry IV: b. Paris, January 1616; d. 15 June 1669. He is peculiarly known by the conspicuous part he took in the civil war of the Fronde. On the accession of Louis XIV, the Queen-regent treated him very favorably, but was soon dissatisfied with his impertinent manners. Her displeasure threw him on the side of the malcontents, and he became one of the leaders of the Frondeurs. He was extremely popular with the Parisians and was consequently called *le roi des halles;* he exercised a powerful influence on the common people against Cardinal Mazarin, who was twice driven out of France. He was so great a favorite that the public subscribed to pay his debts. In 1664 and 1665 he successfully led attacks against the corsairs of Africa; in 1666 he was at the head of the fleet which was to join the Dutch to make war against England; lastly, in 1669 he went to the assistance of the Venetians, then besieged by the Turks in the island of Candia, fought bravely and was killed in a sally.

**BEAUFORT**, bū'fėrt, or bō'fėrt, **Henry**, English Cardinal, natural son of John of Gaunt and half-brother of Henry IV, King of England: b. about 1377; d. Winchester, 11 April 1447. He became bishop of Lincoln 1398, whence he was translated to Winchester, and in 1403 was made chancellor. In 1426 he received a cardinal's hat and was appointed legate in Germany. In 1431 he crowned Henry VI in Paris. Shakespeare depicts him in his 'Henry VI,' but it is questionable whether the likeness is true to history. Consult Radford, L. B., 'Henry Beaufort' (London 1908).

**BEAUFORT, Margaret**, English countess: b. 1441; d. 1509. She was daughter of John, 1st Duke of Somerset, and mother of Henry VII, King of England. She was three times married, namely, to Edward Tudor, Earl of Richmond, in 1455; Henry Stafford, son of the Duke of Buckingham, and to Lord Stanley, a minister of Edward IV. In the Wars of the Roses she and her son Henry became more or less dangerous to the Yorkists and were for a long time in retirement or exile.

**BEAUFORT**, N. C., city, port of entry and county-seat of Carteret County, at the mouth of Newport River, 167 miles east of Raleigh, on the Norfolk Southern Railroad. The harbor here, defended by Fort Macon, is the finest in the State. Beaufort is a summer resort, has a municipal electric lighting plant, fishing industries and manufactures oil. At Cape Lookout, 11 miles to the southeast, is a lighthouse 156 feet high. Pop. 2,483.

**BEAUFORT**, S. C., town and county-seat of Beaufort County; on the Beaufort River, which connects with the fine harbor of Port Royal Sound, and on the Charleston & W. C. Railroad; 15 miles from the ocean and 80 miles southwest of Charleston. It is midway between Charleston and Savannah; has an excellent harbor and is the centre of the phosphate and fertilizer trade of the State. It was founded in 1711, and for many years prior to the Civil War was a noted health and pleasure resort, especially for the cotton planters interested in the plantations on the adjoining Sea Islands. It is still a popular summer and winter resort, principally engaged in phosphate mining, and with large exports of cotton, yellow pine and cypress lumber, rice and sweet potatoes. The national cemetery and the «Old Fort» are the chief objects of interest. Beaufort was first incorporated in 1803. The town is governed under the commission-manager plan. Pop. 2,486.

**BEAUFORT SCALE**, an instrument for measuring the apparent force of the wind, so called from Admiral Beaufort who introduced it into the English navy about 1805. It is now

in common use among navigators. Thirteen numbers are embraced in the scale, ranging from 0 to 12: 0 = calm; 1–3 = light breeze; 4–5 = moderate wind; 6–7 = strong wind; 8–9 = gale; 10–11 = storm; 12 = hurricane.

**BEAUGENCY**, bō-zhŏn-sę, France, a town in the department of Loiret, 16 miles southwest of Orleans, on a hill above the Loire, here crossed by a stone bridge of 26 arches. The town was formerly surrounded by a wall flanked by towers and bastions, parts of which still remain. The square donjon tower of Beaugency, 115 feet high, is a remarkable structure of high antiquity, probably of the 10th or 11th century. A statue of Joan of Arc, unveiled in 1896, commemorates her victory over the English in 1429. The articles manufactured here are principally cloth and leather. There are also some distilleries and a considerable trade in wine. In the Franco-German War General Chanzy was defeated here by the Grand-Duke of Mecklenburg on 7 and 8 Dec. 1870. Pop. 3,500.

**BEAUHARNAIS**, bō-är-nā, **Alexandre**, VICOMTE DE, French soldier: b. Island of Martinique 1760; d. Paris, 23 July 1794. He served with distinction as major in the French forces under Rochambeau which aided the United States in their Revolutionary War, and married Joséphine Tascher de la Pagerie, afterward the first wife of Napoleon. At the breaking out of the French Revolution he was chosen a member of the National Assembly, of which he was for some time president, and which he opened, after the King's departure, with the following words: «*Messieurs, le roi est parti cette nuit: passons à l'ordre du jour.*» In 1792 he was general of the army of the Rhine, but retired in 1793 in consequence of the decree removing men of noble birth from the army. He was falsely accused of having promoted the surrender of Mainz, was sentenced to death and guillotined. His children, Eugène and Hortense (q.v.), were adopted by Napoleon on the latter's marriage to Beauharnais' widow.

**BEAUHARNAIS, Eugène de,** French general: b. Paris, 3 Sept. 1781; d. Munich, 21 Feb. 1824. He was the son of Alexandre Beauharnais, who was guillotined in 1794, and Joséphine Tascher de la Pagerie, afterward wife of Napoleon and Empress of France. During the French Revolution Eugène entered the military service, and after his father's death joined Hoche in La Vendée, and subsequently studied for a time in Paris. In 1796 his mother was married to Napoleon Bonaparte, then commander-in-chief of the army of Italy, and Eugène accompanied the great warrior in his campaigns in Italy and Egypt. In 1805 he was created a prince of France and viceroy of Italy, and after the peace of 13 Jan. 1806, married the Princess Augusta Amelia of Bavaria. In 1807 Napoleon made him Prince of Venice and declared him his heir to the kingdom of Italy. He administered the government of Italy with great prudence and moderation and was much beloved by his subjects. He conducted himself with great prudence on the occasion of the divorce of Napoleon from his mother. In the disastrous retreat from Moscow he did not desert the wrecks of his division for a moment, but shared its toils and dangers with the soldiers, and encouraged them by his example. To him and to Ney France was indebted for the preservation of the remains of her army during that fatal retreat. On the departure of Napoleon and Murat he was left in the chief command and showed great talent at that dangerous conjuncture, and at the battle of Lützen, 2 May 1813, by surrounding the right wing of the enemy, he decided the fate of the day. Napoleon sent him from Dresden to the defense of Italy, and after the fall of Napoleon he concluded an armistice with Count Bellegarde, by which he delivered Lombardy and all upper Italy to the Austrians. Eugene then went immediately to Paris and thence to his father-in-law at Munich. He was at the Congress of Vienna. On the return of Napoleon from Elba he was obliged to leave Vienna and retire to Baireuth. By an ordinance of the King of Bavaria, his father-in-law, he was created Duke of Leuchtenberg, November 1817. The Bavarian principality of Eichstädt was bestowed upon him and his posterity declared capable of inheriting in case of the failure of the Bavarian line. Prince Eugène, under a simple exterior, concealed a noble character and great talents. Honor, integrity, humanity and love of order and justice were the principal traits of his character. Wise in the council, undaunted in the field and moderate in the exercise of power, he never appeared greater than in the midst of reverses. Consult Aubriet, 'Vie politique et militaire d'Eugène Beauharnais, vice-roi d'Italie,' and Masson, F., 'Napoléon et sa famille' (Paris 1900).

**BEAUHARNAIS, François,** MARQUIS DE, French nobleman: b. La Rochelle, 12 Aug. 1756; d. Paris, 10 June 1819. He violently opposed the motion of his younger brother, the Viscount Alexandre, to take from the King the chief command of the army, and would not listen to any of the amendments proposed, saying, «*Il n'y a point d'amendement avec l'honneur.*» He was called in consequence of this, *Le féal Beauharnais sans amendement.* In 1792 he formed the project of a new flight of the royal family; but the arrest of his companion, the Baron Chambon, prevented the execution of the plan. He was appointed major-general in the army of the Prince of Condé, and wrote, in 1792, to the president of the National Assembly, protesting against their unlawful treatment of the King and offering to appear himself among his defenders. When Bonaparte became First Consul the Marquis sent him a letter, in which he exhorted him, by the glory which he would gain by such a course, to restore the sceptre to the house of Bourbon. Having at last recognized the Emperor he was sent by him as ambassador to Florence and Madrid; but having afterward fallen into disgrace he was banished.

**BEAUHARNAIS, Hortense Eugenie,** wife of Louis Bonaparte and Queen of Holland: b. Paris, 10 April 1783; d. Arenberg, Switzerland, 3 Oct. 1837. She was the daughter of Alexandre Beauharnais and Joséphine, afterward wife of Napoleon. She was to have married Desaix; but on 7 Jan. 1802, in compliance with the wish of Napoleon, became the wife of his younger brother Louis, who also gave up a former attachment for the marriage. The union was not happy and Hortense returned to Paris and lived a dissolute life there

apart from her husband, who vainly endeavored to procure a divorce. Prominent among her lovers was the Comte de Flahaut, for whom she composed her popular air, *"Partant pour la Syrie,"* as he was leaving Paris for Germany, and Admiral Veruel, a Dutch naval officer. The former is believed to have been the father of M. de Morny, universally recognized as the illegitimate half-brother of Napoleon III, whom he greatly aided in becoming emperor; and to the latter is attributed the paternity of Napoleon III himself. It is known that Louis Bonaparte had a warm dispute with his brother, the Emperor, touching this child, which he averred to be none of his, and that his unwillingness to recognize it as such was only overcome by the most decided measures on the part of Napoleon. The first child of Hortense, Napoleon Charles, died in 1807 at the age of five. After the separation of Napoleon and Joséphine, Hortense remained on intimate terms with the former. When the Bourbons came back in 1814 she alone of all the Bonaparte family remained in Paris. After the Hundred Days she lived in Augsburg, in Italy, and in Switzerland, devoted to her sons and greatly beloved by the people with whom she came in contact, who found her a kind and gentle benefactress. When her sons had to flee, after participating in an unsuccessful attempt at revolution in Italy in 1831, she went for a time to Paris and was kindly received by Louis Philippe. She possessed much literary as well as social talent.

**BEAULIEU,** bō-lyė, **Jean Pierre,** Austrian military officer: b. Namur, 26 Oct. 1725; d. near Linz, Austria, 22 Dec. 1819. He served in the Seven Years' War; was promoted a major-general for his successful operations against the Belgian insurgents in 1789; commanded at Jemappes in 1792; was defeated by Napoleon in 1796, while commander-in-chief of the forces in Italy, in the battles of Montenotte, Millesimo, Montesano, Mondovi and Lodi.

**BEAULIEU,** bū'lī, England, village in Hampshire, England, six miles southwest of Southampton. It contains the remains of an abbey founded by King John and much visited by students of mediæval architecture. Within the limits of Beaulieu Manor exemption from arrest for debt was enjoyed till very recent years.

**BEAUMARCHAIS,** bō-mär-sha, **Pierre Augustine Caronde,** French dramatist: b. Paris 1732; d. May 1799. He was the son of a watchmaker named Caron who destined him for his trade. He early gave striking proofs of his mechanical and also of his musical talents. He became teacher of the harp to the daughters of Louis XV and was admitted to their society. A handsome man of good address, he was very fortunate in his love affairs and married two wealthy widows in succession. He added to his wealth by successful commercial ventures. He published in 1767 'Eugenie,' and in 1776, 'Les Deux Amis' — two dramas of the sentimental bourgeois type, the former of which still holds a place on the stage. But all his theatrical pieces were merely the recreations of a man of affairs bent on making his fortune and desirous at all hazards to keep himself in front of the public. His rise to literary fame was sudden and resulted from his appearance in a suit for 15,000 livres which he claimed as due to him as surviving partner in a speculation. He made his appeal to the public in four 'Mémoires,' in which humor, serious argument, irony and eloquence were combined with dramatic talent, which added much to the gaiety of France and are said to have occasioned pangs of jealous envy in Voltaire. 'The Barber of Seville,' developed from a comic opera to a comedy in five acts, was given after long delays in 1775, and its abundant gaiety, pointed with wit, fully established its author's fame. By the purchase of official posts he raised himself to the ranks of the nobility. "Nobody can deny my title to noble rank," said he, "because I hold a receipt for it." During the American Revolutionary War he acted as an intermediary between the French and Spanish governments and the American insurgents under the firm name of Rodrigue, Hortalez and Company. He built up a great fleet of ships, of which one vessel, the *Fier Rodrigue,* took part in an engagement. But this enterprise was by no means profitable: it was only in 1835 that his family received from the American government 800,000 francs for claims which in 1793 had been admitted at 3,000,000. 'The Marriage of Figaro,' a sequel to 'The Barber of Seville,' was completed in 1778, but owing to royal opposition it was not permitted to appear until 1784. Its long proscription had whetted the public appetite to see it performed, and so great was the crowd assembled to witness its first representation that three persons were crushed to death. It depicits the resourcefulness with which a daring valet disputes the claim of a libertine lord for the possession of his betrothed. In Figaro the author drew himself. The established order is ridiculed in a brilliant cascade of wit; the mordant attacks on the nobles and the privileged classes, interpreting the feelings of the people, excited them so much that Beaumarchais, with Voltaire and Rousseau, may be regarded as one of the authors of the Revolution. Napoleon's testimony is emphatic on that point. But Beaumarchais wrote with no political end in view. In 1792 he wrote 'La Mère Coupable,' but never regained his former fame. His last work was 'Mes six Epoques,' in which he relates the dangers to which he was exposed in a revolution in which a celebrated name, talent and riches were sufficient causes of proscription. He lost about 1,000,000 livres by his famous edition of the works of Voltaire (1785) and still more at the end of 1792 by his attempt to provide the French army with 60,000 muskets. During his absence his property was confiscated, his third wife imprisoned and he classed among the émigrés. In 1809 an edition of his works appeared in seven volumes; a later edition in one volume came out in 1835. Beaumarchais was a singular instance of versatility of talent, being at once an artist, politician, projector, merchant and dramatist. See MARRIAGE OF FIGARO, THE; BARBER OF SEVILLE, THE. Consult Loménie, 'Beaumarchais et son temps' (English translation 1856); 'Beaumarchais et ses œuvres' (1887); 'Histoire de Beaumarchais' (1886); Lescure, 'Eloge de Beaumarchais' (1887); Bonnefou, 'Etude sur Beaumarchais' (1887); Hallays, 'Beaumarchais' (1897).

**BEAUMARIS,** bō-mar'is, north Wales, seaport town Isle of Anglesey. It is situated on the west shore of the Menai Strait, near its junction with the Irish Sea, where it expands into a good roadstead called Beaumaris Bay. It consists of several well-paved streets; houses in general good, particularly in the principal street, terminated by the ancient castle of Beaumaris, erected by Edward I; while many modern dwellings of very handsome appearance have lately been erected. The chief public buildings, exclusive of the churches, are the town-hall, a commodious and handsome edifice; the grammar-school, police office and public library. The chief place of worship is the church of Saint Mary, a spacious and elegant structure in the later style of English architecture, with a lofty, square embattled tower; and several chapels. The harbor is safe and commodious and may be entered at any state of the tide. Beaumaris is now a favorite watering place. It has steamship communication with Liverpool. Pop. 2,231.

**BEAUMONT,** Sir **George Howland,** English art patron: b. Dunmow, Essex, 6 Nov. 1735; d. 7 Feb. 1827. He possessed considerable skill as a landscape painter, but was noted more especially as a munificent patron of the arts. The establishment of the National Gallery was mainly owing to his exertions, and 16 of its fine paintings, chiefly landscapes, including one by N. Poussin, three by Claude and the 'Blind Fiddler' of Wilkie, were his gifts. Wordsworth dedicated to him his 'Elegiac Musings' (1830).

**BEAUMONT,** bō-môn, **Gustave Auguste de la Bonnière de,** French publicist: b. 16 Feb. 1802; d. Tours, 6 Feb. 1866. He early entered upon the legal profession, and, in 1831, was sent with De Tocqueville to study the penitentiary system of the United States. He was elected deputy in 1839, and, in 1848, vice-president of the Constituent Assembly. He was subsequently Ambassador to London and Vienna. Beaumont first became known as a writer by his publishing, in conjunction with M. de Tocqueville, 'Traité du système pénitentiaire aux Etats-Unis et de son application à la France' (1832). Among his other works may be named, 'Marie, ou l'esclavage aux Etats-Unis' (1835) — a work somewhat resembling 'Uncle Tom's Cabin'; and 'L'Irlande sociale, politique, et religieuse' (1839).

**BEAUMONT,** Sir **John,** English poet: elder brother of Francis Beaumont: b. Leicestershire 1583; d. 19 April 1627. He studied at Broadgate Hall (now Pembroke College), Oxford. In 1605 he succeeded to his father's estates on the death of his elder brother. He began writing poetry at a comparatively early age, and in 1602 published anonymously a mock-heroic piece entitled 'The Metamorphosis of Tobacco.' A long poem entitled 'The Crown of Thorns' was lost in manuscript form. He was created a baronet in 1626, died the following year and was buried in Westminster Abbey. In 1629 his son, Sir John, published a collection of his poems under the title 'Bosworth Field, with a Taste of the Variety of other Poems left by Sir John Beaumont.'

**BEAUMONT, Joseph,** English poet: b. Hadleigh, Suffolk, 13 March 1616; d. 23 Nov. 1699. He was educated at Peterhouse College, Cambridge, where he gained great distinction. Elected a fellow in 1636, he was ejected with others in 1644 owing to royalist sympathies, and while living in retirement wrote 'Psyche,' an epic poem (1648). On the restoration of the monarchy he became a royal chaplain, and after a brief term as master of Jesus College he was appointed, in 1663, master of Peterhouse. He received the Regius professorship of divinity at Cambridge in 1674.

**BEAUMONT, Joseph,** English Wesleyan clergyman: b. Castle Dowington, 19 March 1794; d. Hull, 21 Jan. 1855. He was educated in the Wesleyan school at Kingswood, was converted there and spent some time in the study of medicine. He soon entered the ministry and in 1813 was received on trial by the conference. An impediment in his speech greatly hindered his success, but by severe exercise he overcame it and became an effective preacher. For many years he was one of the most popular pulpit and platform speakers in Great Britain.

**BEAUMONT, William,** American surgeon: b. Lebanon, Conn., 1785; d. Saint Louis, 25 April 1853. He is principally noted for his discoveries regarding the laws of digestion and for his experiments upon the body of Alexis St. Martin. In 1822 Beaumont was stationed at Michillimackinac, Mich. On 6 June, St. Martin, a young man 18 years of age, in the service of the American Fur Company, was accidentally shot, receiving the whole charge of a musket in his left side, from a distance of about one yard, carrying with it portions of his clothing and fracturing two ribs, lacerating the lungs and entering the stomach. Notwithstanding the severity of the wound, Beaumont undertook his cure, and by careful and constant treatment and attention the following year found him enjoying good health, with his former strength and spirits. In 1825 Beaumont began a series of experiments upon the stomach of St. Martin, showing its operations, secretions, the action of the gastric juices, etc.; these experiments he was obliged to discontinue after a few months, but renewed them at various intervals until his death; his patient during so many years presenting the remarkable spectacle of a man enjoying good health, appetite and spirits, with an aperture opening into his stomach two and a half inches in circumference, through which the whole action of the stomach might be observed.

**BEAUMONT,** Texas, city and county-seat of Jefferson County, situated on the west bank of the Neches River, on the Southern Pacific, Sabine, and East Texas, Gulf, Colorado and Santa Fé, Gulf and Interstate, Kansas City Southern and Beaumont, Sour Lake and Western railroads, 80 miles northeast of Houston and 22 miles distant from the Gulf of Mexico. Beaumont is an important shipping point, is at the head of tidewater navigation and has a number of important industries, among which are oil refineries, rice mills, stove and iron works and lumber. Oil was discovered in the Beaumont fields in 1901, when there was opened up a series of gushers, the most remarkable in the history of the oil industry. That oil was there had long been known and several

men had lost fortunes trying to get at it, but it was not until the wells were sunk on Spindle Top that success came. The structure of Spindle Top appears to be that of a dome with steep sides and rather flat summit. The equipment of the refineries, the pipe lines and transportation and storage facilities for this industry alone represent an investment of over $45,000,000. The lumber industry has assumed great proportions, the city being the natural headquarters for this business, and the annual output now exceeds 360,000,000 feet of yellow pine. The cultivation of rice was begun some years ago; the belt extending along the coast of Louisiana and Texas produces more rice than is consumed in this country, and the largest rice mill in Texas is located at Beaumont. Among the most notable public buildings are the new Federal courthouse and post-office, costing over $200,000, the Jefferson County courthouse, city hall, Y. M. C. A. building and the Sisters' Hospital. Religious services are held in churches representing nearly all denominations. A theatre has been erected at a cost of about $100,000. There are four banks, with a combined capital of $600,000 and doing an annual business of $25,000,000. For the public education there are a fine new high school with manual training department and several ward schools. Bell Austin Institute is located there. About 20 miles of street are paved with brick and shell; a complete sewerage system has been installed; a new waterworks system has been completed at a cost of over $300,000; and there are well-appointed fire and police departments. Beaumont was first settled in 1836, being plotted by John Grisby, Joseph Pulsifer, Henry Millard and Thomas B. Huling. It was incorporated under the general law in 1881 and granted a special charter in 1889, the affairs of the community now being administered by a mayor and council of six members, elected biennially. About 80 per cent of the population are white, the remainder negroes. Pop. 20,640.

**BEAUMONT AND FLETCHER.** Beaumont, Francis, b. 1584; d. 1616; Fletcher, John, b. 1579; d. 1625: English poets and dramatists, well known for their work in collaboration.

Francis Beaumont, third son of Sir Francis Beaumont of Grace Dieu in Leicester, one of the justices of the Common Pleas, was admitted gentleman commoner at Broadgates Hall, Oxford, in 1597, and was entered at the Inner Temple, London, 3 Nov. 1600. He married Ursula, daughter of Henry Isley of Sundridge, Kent, probably in 1613, and left two daughters, one a posthumous child. He was buried in Westminster Abbey.

John Fletcher, son of Richard Fletcher, bishop of London, was entered as a pensioner at Bene't College, Cambridge, 1591. His father, as dean of Peterborough, attended Mary Queen of Scots at Fotheringay, and was later rapidly promoted to the sees of Bristol, Worcester and London. He was a successful courtier and a favorite of the Queen, though he suffered a loss of favor shortly before his death in 1596. The dramatist received by bequest a share in his father's books, but apparently little other property. He was buried 29 Aug. 1625, in Saint Saviour's, Southwark.

Although the biographical details of the friendship and collaboration of the two dramatists are involved in uncertainty, it seems probable that Fletcher began writing plays for the London theatres as early as 1604-05, and that his friendship with Beaumont was established by 1607, when both prefixed commendatory verses to Jonson's 'Volpone,' and 'The Woman Hater,' probably by Beaumont alone, was published. In 1612, in the address to the reader prefixed to the 'White Devil,' Webster praises "the no less worthy composures of the both worthily excellent Master Beaumont and Master Fletcher," ranking them on equal terms with such scholars and experienced dramatists as Chapman and Jonson, and apparently above Shakespeare, Dekker and Heywood. Before 1612, the reputation of Beaumont and Fletcher as dramatists must have been well established.

By 1612, indeed, the work of their collaboration was accomplished, for there is no direct evidence that Beaumont wrote anything for the public stage after that date. The most famous collaboration in the history of English literature, therefore, comprises only some half dozen years. During this time the dramatists, we are told, lived as brothers, sharing everything in common; and so intimate was their association as writers that it is only recently that criticism has been able to separate their shares in the authorship of the plays with any degree of probability. Fletcher's energies seem to have been devoted exclusively to the theatre; but Beaumont wrote verses to the Countess of Rutland, and elegies on the Lady Markham, Lady Penelope Clifton, and the Countess of Rutland; and also a masque for the Lady Elizabeth's marriage in 1613, performed with great splendor by the gentlemen of the Inner Temple and Gray's Inn. 'Salmacis and Hermaphroditus,' 1602, may possibly have been written by him; it is so assigned in the entry of 1639 in the *Stationer's Register*. Eight plays may be assigned to this period before 1612 with considerable certainty, each being the result of collaboration except where the contrary is indicated: 'The Woman Hater' (by Beaumont alone); 'The Knight of the Burning Pestle' (Beaumont); the 'Faithful Shepherdess' (Fletcher); 'Philaster'; 'The Coxcomb'; 'The Maid's Tragedy'; 'Cupid's Revenge'; 'A King and No King.' Eight other plays may be assigned before 1612 with more or less probability: 'The Woman's Prize' (Fletcher); 'Wit at Several Weapons' (first version); 'Love's Cure'; 'Thierry and Theodoret'; 'Monsieur Thomas'; 'Four Plays in One'; 'The Scornful Lady'; 'The Captain.'

The brief period of their collaboration came at the climax of the astonishingly rapid and varied development of the Elizabethan drama. It was during these years that Jonson and Shakespeare were at their greatest; but a growing critical consciousness among the dramatists themselves and an increasing patronage from the court seemed to promise for the drama a future even greater in achievement than its past. Gentlemen by birth and breeding, attached to the court rather than the people, Beaumont and Fletcher naturally joined with Jonson in viewing the plays of their predecessors with critical, though doubtless appreciative minds, and in seeking for a more cultivated audience and a more critical art. Their attitude toward the preceding drama is indicated by their abandonment of several species long

popular but by this time falling under Jonson's attacks. Beaumont and Fletcher in their collaboration made no use of the historical matter of the chronicles or of the methods or spectacles of the chronicle play; nor did they use the story of blood vengeance, which had been popularized by Kyd in 'The Spanish Tragedy,' transformed by Shakespeare into 'Hamlet,' and was still the prevailing type of tragedy. Some of their earlier plays were experiments that further attest their reforming attitude. Beaumont's 'Woman Hater' was a comedy in Jonson's manner; and his 'Knight of the Burning Pestle,' written under the inspiration of 'Don Quixote,' was a burlesque on contemporary plays of adventure. Fletcher's 'Faithful Shepherdess' was an attempt to replace the abortive pastorals of earlier playwrights by a genuine and elaborate pastoral tragi-comedy on the model of 'Il Pastor Fido.' These plays won the praise of the critical, but even the manifest genius of the two latter was impotent to avert the disapproval of a public unused to such innovations.

Their other plays, though hardly less novel in character, and affording full opportunity for the authors' gifts of invention and language succeeded in captivating the public. These successes, the result of a constant attention to theatrical effectiveness, comprised two distinct classes of plays, the comedies and the heroic romances, both immediately popular and both of large influence on the later history of the drama.

Their comedy has its resemblances and connections with preceding drama; but it is a distinct departure from Jonson's comedy of "humours," and it marks out a line of development that led to the plays of the Restoration. A lively plot, abounding in surprises, combines in a love story the manners of the day and the excitements of romance, an overflowing wit and no morals. Its full development belongs to Fletcher's later years; 'The Scornful Lady' is perhaps the best representative of the collaboration.

The romances, sometimes tragic and sometimes tragi-comic, also mark important innovations. The period immediately preceding them had been distinguished by Shakespeare's tragedies, the prevalence of realistic comedy and the absence of sentimental or romantic comedy or tragi-comedy. The return to romance seems to have been established by 'Philaster,' and resulted in six plays that form the most distinctive product of the collaboration.

Other plays of the collaboration and many later written by Fletcher might be grouped with these; but the six plays, 'Four Plays in One,' 'Thierry and Theodoret,' 'Philaster,' 'The Maid's Tragedy,' 'Cupid's Revenge,' 'A King and No King,' serve to define the type, and resemble one another so closely in material, construction, characterization and style that a single analysis will serve for all.

Their plots are usually original, and are ingenious complications of suspense and surprise. Like most preceding tragedies, they deal with royal or noble persons, foreign localities, and the plots and passions that convulse kingdoms; but there are no battles or processions, and the action is mainly confined to the rooms of the palace or an adjoining forest. A story of gross sensual passion is usually contrasted with one of idyllic sentiment: and a great variety of incidents are designed to keep the interest at fever heat. A girl disguised as a page is stabbed by the man whom she loves; a woman accused of adultery defies her accusers; the hero is saved from the tyrant by a timely insurrection — such idyllic or melodramatic material as this is skilfully constructed into a number of telling theatrical situations, leading through a series of surprises to startling climaxes or catastrophes. In the ingenuity of their structure even more than in the choice of their material, the romances marked a departure from preceding plays. Their dramatis personæ belong to the impossible and romantic situations, and are usually of certain types,— the sentimental or violent hero; his faithful friend, a blunt outspoken soldier; the sentimental heroine, often disguised as a page that she may save the hero; the evil woman who makes most of the trouble; and the poltroon, usually a comic personage. With the addition of a king, some persons of the court and some from the lower ranks, the cast is complete. Even at their best such plays afford little that is valuable in the revelation of character or the criticism of life; yet the masterpieces of the class, 'Philaster' and 'The Maid's Tragedy,' take almost if not quite the highest rank after Shakespeare, because of the skill of their invention and the felicities and vigor of their poetry.

Both romances and comedies delighted their own age, and the young authors were quickly established among the poets of highest rank in both critical and popular estimation. There is evidence that their heroic plays suggested Shakespeare's change from tragedy to romance, and that 'Philaster' led somewhat directly to 'Cymbeline.' Certainly both comedies and romances were much imitated by dramatists of the next 30 years. Their freedom in versification, their emphasis on stage situation rather than interpretation of character, their heedlessness of morality, and their fondness for the abnormal and sensational, all led to the decadence of the drama; but much of what is worthy as well as what is unworthy in the drama of the 17th century may be traced back to their initiative. They were ranked above Shakespeare and Jonson by their contemporaries, and their plays remained the favorites of the theatre during the Restoration. By the beginning of the 18th century, pseudo-classicism brought them into disrepute with critics, and a chastened stage condemned their immorality. During the two centuries since they have never recovered their position on the stage, but numerous editions of their plays testify to their continued favor with the reading public.

After 1612 Fletcher continued for 13 years to write plays with unabated energy, displaying even greater versatility of invention and wit than when writing with Beaumont, but becoming more addicted to his mannerisms and more careless of moral decency. About 1613 he seems to have collaborated with Shakespeare on 'Henry VIII' and 'The Two Noble Kinsmen,' and the association with the great master brought forth some of his finest passages. He was, indeed, frequently engaged in collaborating with various authors, and especially with Massinger. 'The Queen of Corinth,' 'The Double

Marriage,' 'The Laws of Candy,' 'The Little French Lawyer,' 'The False One,' 'The Prophetess' and 'The Spanish Curate' are some of the plays most certainly to be ascribed to this partnership, and most typical of the two authors. Fletcher, however, did not require collaboration for stimulus. In 'Bonduca' he produced one of the most vivid of our historical tragedies; and in a series of romances and comedies, of which 'The Little French Lawyer,' 'The Chances,' 'The Wild Goose Chase' and 'The Loyal Subject' are among the best, he gave continued evidence of his extraordinary fertility both as a playwright and as a poet.

Most of the characteristics of these later plays may, however, be traced in the period of Fletcher's collaboration with Beaumont; and, though modern criticism has denied to the latter a share in the majority of the plays long published under his name, it is difficult to separate the sentiments and opinions of the two friends or to divide their contribution to the development of the drama.

The following plays were printed separately, many of them several times before 1647, when the first collected edition appeared. The dates are for the first editions. 'The Woman Hater,' 1607; 'The Faithful Shepherdess,' 1609; (?); 'The Knight of the Burning Pestle,' 1613; 'Cupid's Revenge,' 1615; 'The Scornful Lady,' 1616; 'The Maid's Tragedy,' 1619; 'A King and No King,' 1619; 'Philaster,' 1620; 'Thierry and Theodoret,' 1621; 'The Two Noble Kinsmen,' 1634; 'The Elder Brother,' 1637; 'Rollo, or the Bloody Brother,' 1639; 'Monsieur Thomas,' 1639; 'Wit Without Money,' 1639; 'The Coronation,' 1640; 'The Night Walker,' 1640; 'Rule a Wife and Have a Wife,' 1640. In 1647 appeared the first folio entitled, «Comedies and Tragedies written by Francis Beaumont and John Fletcher,» and containing the following plays «never before printed»: 'The Mad Lover,' 'The Spanish Curate,' 'The Little French Lawyer,' 'The Custom of the Country,' 'The Noble Gentleman,' 'The Captain,' 'The Beggar's Bush,' 'The Coxcomb,' 'The False One,' 'The Chances,' 'The Loyal Subject,' 'The Laws of Candy,' 'The Lovers' Progress,' 'The Island Princess,' 'The Humorous Lieutenant,' 'The Nice Valour,' 'The Maid in the Mill,' 'The Prophetess,' 'The Tragedy of Bonduca,' 'The Sea Voyage,' 'The Double Marriage,' 'The Pilgrim,' 'The Knight of Malta,' 'The Woman's Prize,' 'Love's Cure,' 'The Honest Man's Fortune,' 'The Queen of Corinth,' 'Woman Pleased,' 'A Wife for a Month,' 'Wit at Several Weapons,' 'The Tragedy of Valentian,' 'The Fair Maid of the Inn,' 'Love's Pilgrimage,' 'Four Plays in One,' 'The Mask of the Inner Temple and Gray's Inn.' In 1679 appeared the second folio, containing all the plays of the 1647 folio and the 17 previously published and also 'The Wild Goose Chase' (4to 1652). 'The Faithful Friends' and 'Sir John Van Olden Barnavelt' remained in manuscript and were not printed until the 19th century. With the exception of a few plays already noted as by Beaumont alone, Fletcher seems to have had at least a share in all of these plays and in 'Henry VIII.' See DRAMA; ELIZABETHAN LITERATURE — THE DRAMA; PHILASTER.

**Bibliography.**— Collective editions of Beaumont and Fletcher were published in 1711; 1750, edited by Theobald, Seward and Symson, 10 vols.; 1778, 10 vols.; 1812, ed. Henry Weber, 14 vols.; 1843–46, ed. Alexander Dyce, 11 vols.; and there have been various reprints of these editions. Dyce's edition has long remained the standard, and it has hardly been supplanted by the elaborate variorum edition under the editorship of A. R. Waller (1905–10).

The most important of recent critical discussions are 'Francis Beaumont, a Critical Study,' by G. C. Macaulay (1883); 'The Influence of Beaumont and Fletcher on Shakespeare' by A. H. Thorndike (1901); 'The Chronicle of the English Drama,' by F. G. Fleay (Vol. I, pp. 164–229); and articles by Robert Boyle in *Englische Studien* (1881–87), and by E. F. Oliphant, *Englische Studien* (1890–92). Separate plays with critical introductions and notes are published in 'Belles Lettres Series' (Boston).

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**BEAUNE,** bōn, **Florimond de,** French mathematician: b. Blois 1601; d. there 1652. He materially developed his friend Descartes' method in geometry and was the first to treat systematically the question of superior roots of numerical equations. What is styled «Beaune's Problem,» solved only by Jean Bernouilli, depends on the determination of a curved line from the property of its tangent. He was the first to treat in a systematic way superior and inferior roots of numerical equations.

**BEAUNE,** France, a town in the department Côte d'Or, 23 miles south-southwest of Dijon. As early as the 7th century it was a fortress under the name of Belna. It is surrounded with planted ramparts, which furnish a pleasant promenade, is well built and has a notable church of Notre Dame, dating from the 12th century, and a large hospital founded in 1443 by Nicholas Rollin, chancellor of Philip the Good, Duke of Burgundy. Beaune has also a public library containing over 50,000 volumes with 500 manuscripts, a very fine public garden, a theatre, etc. The trade is chiefly in Burgundy wines, to one of which the town gives its name, and in agricultural produce. The manufactures include woolen cloth, cutlery and leather. There is a statue, erected in 1849, to the celebrated mathematician Monge, who was born there. Pop. (1911) 13,409.

**BEAUPORT,** Canada, parish in Quebec County, on the Saint Lawrence, two miles below Quebec city and connected with it by the Quebec Railway, Light and Power Company's line. There is a Roman Catholic church, college and convent. Saw and grist mills, cement works, manufacture of threshing machines and quarrying are the chief industries. The seigniory of Beauport, granted in 1634 to Robert Giffard, was the first to be established in New France. Pop. of parish about 5,000.

**BEAUREGARD,** bō'rę-gärd, **Pierre Gustave Toutant,** American Confederate general: b. New Orleans, 28 May 1818; d. there, 20 Feb. 1893. After studying military science at West Point he joined the artillery, but was afterward transferred to the engineers. In the Mex-

ican War of 1846–47 he distinguished himself and was promoted major. On the outbreak of the Civil War he resigned in order to enter the Confederate army and was placed in command of the city of Charleston, S. C. On 12 April 1861 he reduced Fort Sumter and later in the same year led the Confederates to victory in the battle of Bull Run. At the battle of Shiloh in the following year he assumed the command on the death of Gen. A. S. Johnston, but, though very successful on the first day, he was ultimately compelled to retreat to Corinth, Miss., which he had to evacuate shortly afterward. From September 1862 till April 1864 he defended Charleston against the siege operations of General Gillmore and Admirals Dupont and Dahlgren. October 1864 he became commander of the military division of the West, in which capacity he strove without success to resist Sherman's victorious advance, and in April 1865 he and J. E. Johnston surrendered. He was afterward a railroad director, adjutant-general of Louisiana and manager of the Louisiana State lottery. In 1866 the chief command of the Rumanian army was tendered him and in 1869 that of the army of the Khedive of Egypt, both of which he declined. He published 'The Principles and Maxims of the Art of War' (1863); and 'Report on the Defense of Charleston' (1864). Consult Roman, 'Military Operations of General Beauregard' (New York 1883).

**BEAUREPAIRE-ROHAN,** bō-r'-pār-rō-äṅ, **Henriques de,** Brazilian geographer of French extraction: b. province of Piauhy, about 1818; d. 1894. He traveled extensively in the region south of Rio de Janeiro, publishing the results of his tour in a volume called 'Descripçâo de uma viagem de Cuyabá ao Rio de Janeiro' (1846). The Brazilian government subsequently employed him to gather statistics relating to the interior provinces, and he was at one time lieutenant-general in the Brazilian army. His 'Etudios acerca da organizaçâo da carta geographica e da historia physica e politica do Brazil' (1877) is a work of great importance.

**BEAUSOBRE,** bō-sōbr, **Isaac de,** French Protestant historian: b. Niort in France, 8 March 1659; d. Berlin, 5 June 1738. He was at first intended for the law, but his own inclinations were decidedly in favor of the Church, and in 1683 he became Protestant minister of Chatillon-sur-Indre. In the persecuting spirit of the time the church had been closed by fixing the royal seal upon the gate. Beausobre held special services in his own house, and being for this reason obliged to flee, sought an asylum at Rotterdam. Shortly after he became chaplain to the Princess of Dessau and in 1694 was appointed minister to French Protestants at Berlin. He enjoyed much of the favor both of Frederick William I and of the Crown-Prince, afterward Frederick the Great. His most remarkable work is the 'Histoire critique de Manichée et du Manichéisme' (1734); and he also wrote 'Histoire de la Réformation' (1785–86).

**BEAUTY.** See ÆSTHETICS; ART.

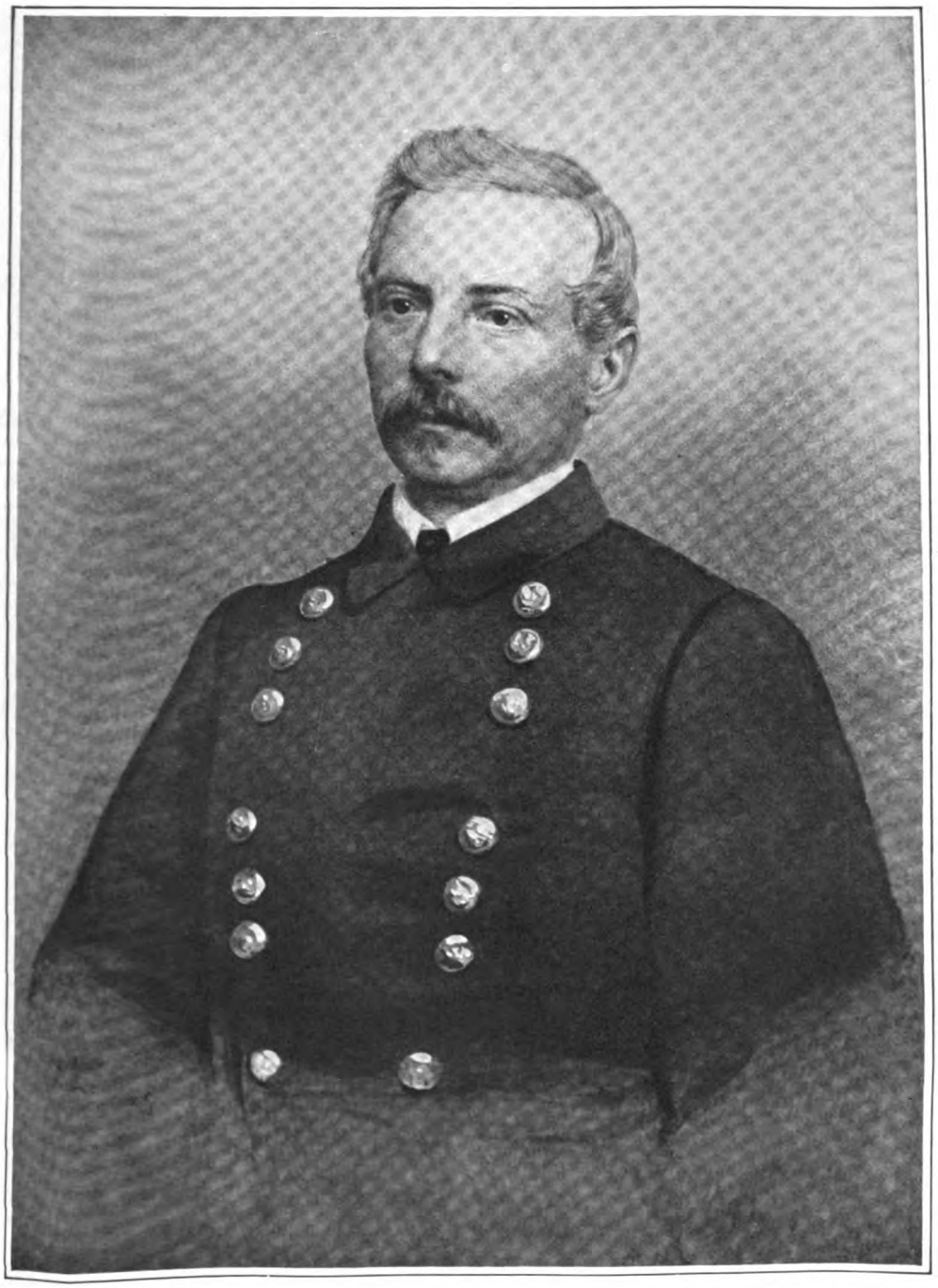
**BEAUTY AND THE BEAST,** an ancient story very evidently a myth of the Sun and the Dawn. In all the variants the hero and the heroine cannot behold each other without misfortune. One of the earliest forms of the story is the Vedic myth of 'Urvasi and Purûravas.' Another is the Sanskrit Bheki, who marries on condition she shall never see water; thus typifying the dawn, vanishing in the clouds of sunset. In Greek myths we find a resemblance in some features of 'Orpheus and Eurydice'; and the name of Orpheus in its Sanskrit form of Arbhu, meaning the sun, hints quite plainly at a solar origin of this cycle of tales. A more marked likeness exists in the myth of Eros and Psyche by Apuleius, and in the Scandinavian tale of the 'Land East of the Sun and West of the Moon,' related by Morris in 'The Earthly Paradise.' More or less striking parallels are seen in the Celtic 'Battle of the Birds'; in the 'Soaring Lark,' by Grimm; in the Kaffir 'Story of Five Heads'; in Gaelic, Sicilian and Bengal folk-lore, and even in as remote a quarter as Chile. The tale is told in Straparola's 'Piacevoli notti' (1550); in Madame Villeneuve's 'Contes Marines' (1740), and is the basis of Gretry's opera, 'Zémise et Azor.'

**BEAUVAIS,** bō-vā (ancient BRATUSPANTIUM, BELLOVACUM), France, town, capital of the department of Oise, 41 miles north of Paris, in the old province of Ile de France. It stands in a rich valley enclosed by wooded hills, at the confluence of the Avelon with the Thérain; and though poorly built, derives great interest from its antiquity. It existed in the time of the Romans, and in 1472 resisted an army of 80,000 Burgundians under Charles the Bold. The principal edifice is the unfinished cathedral of Saint Pierre, consisting of choir and transept. It has the loftiest stone vault in the world and beautifully painted glass executed by the most celebrated masters of the art. The choir was built in 1225–72. The town-house is the finest modern structure. The principal manufacturing establishment is the Gobelins branch tapestry and carpet manufactory, famed for the beauty of its products and employing about 400 hands; and there are also manufactures of woolens, buttons, brushes, gold and silver lace, etc. It has also large bleachfields, tanneries and dye-works. Beauvais is the seat of a bishop and contains a public library of 30,000 volumes, a museum, etc. Pop. 19,841.

**BEAUVAIS TAPESTRY.** See TAPESTRIES.

**BEAUVOIS,** bō-vwä, **Ambrose Joseph Palisot de,** French naturalist: b. Arras 1752; d. 1820. He visited Africa, the West Indies and America in connection with his favorite pursuits in natural history and was rewarded by the discovery of the jaws and molar teeth of the great mastodon, on the banks of the Ohio. He afterward returned to France and devoted the remainder of his life to the arrangement and publication of his collections. Comparatively few of them had arrived in safety, but out of the wreck he managed to procure materials for the important publications on which his fame chiefly rests. The most valuable is his 'Flore d'Oware et de Benin.' One of the most curious plants contained in it has been named after him Belvisia.

**BEAUX,** bō, **Cecilia,** American artist: b. Philadelphia 1863. She studied under William Sartain and at Paris. She four times gained



GENERAL P. G. T. BEAUREGARD

the Mary Smith prize of the Pennsylvania Academy of Fine Arts and was awarded the same academy's gold medal and Temple gold medal. She received similar honors from the National Academy of Design, the Philadelphia Art Club, Carnegie Institute and the Paris Exposition of 1900; the Saltus gold medal, 1913; and the medal of honor, Panama, 1915.

**BEAUX-ARTS,** bō-zär, **Academie des.** See ACADEMY OF FINE ARTS, THE.

**BEAUX-ARTS ARCHITECTS, Society of,** an association organized in 1902 by the American graduates of the Ecole des Beaux-Arts in Paris. The object of the Society is to afford instruction in architecture in the United States on the same principles as in the Paris institution. In various cities and towns now numbering about 50, local groups of students are organized into schools, the work of which is sustained by contributions from the students themselves. The services of the instructor are generally given free. The work of all the schools is more or less under the general supervision of the committee on education of the Society, which issues schedules guiding the courses. Included are various problems which are worked out by the students competitively, designated under two divisions: Class A and Class B. Four prizes are awarded: the Warren prize, for the best plan of a group of buildings; the Pupin prize, for the best decoration of scientific appliances; the Goelet prize, for the best plan of a city block, and the Bacon prize, for the best work done under Class A. Besides the latter prize, offered by Robert Bacon, he also presents a yearly Paris scholarship, which includes $2,500 in cash to enable the winner to study for two and a half years in the Ecole des Beaux-Arts in Paris.

**BEAUX' STRATAGEM,** a well known comedy by the English dramatist, George Farquhar (q.v.).

**BEAUXITE.** See BAUXITE.

**BEAVEN, Robert,** Canadian statesman: b. Leigh, Staffordshire, England, 28 Jan. 1836. He was educated at the College of Upper Canada, went to California by way of Panama in the early days, and from California went to British Columbia and was successfully engaged in gold mining there for some years. He returned to Toronto and again visited California over the Panama route. Later he removed to Victoria, B. C., and has continued there. He identified himself with the agitation for confederation with the Dominion, took an active part in the organization of the Confederate League and after the consummation of the union in 1871 he was elected member for Victoria; he was re-elected until 1894. In 1892, 1893 and 1897 he was mayor of Victoria. In 1872 he was chief commissioner of lands and works in the De Cosmos cabinet and held the office for several years. In 1878 he was appointed Minister of Finance and Agriculture. Later he became Premier and resigned in February 1883 when his government was defeated. While in office he had largely to do with all important questions of that day, construction of the Canadian Pacific Railway, the building of the Esquimalt Graving Dock, and the establishment of a free non-sectarian system of education, the Law Stamp Act, the Game Protection Acts 1878–80, the Amended Ballot Act 1878. As a parliamentarian, pure and simple, he was very able; while as an authority on procedure he may be regarded as the equal of any man in Canada.

**BEAVEN, Thomas,** American Roman Catholic prelate: b. Springfield, Mass., 1849. He was educated at the Jesuit colleges of Holy Cross, Worcester, Mass., and Georgetown, D. C. After holding pastorates at Spencer and Holyoke, Mass., he was consecrated bishop of Springfield in 1892 where his gifts as an organizer and the application of sound business principles to the temporal affairs of the Church have produced striking results.

**BEAVER, James Addams,** American military officer and statesman: b. Millerstown, Pa., 21 Oct. 1837; d. 31 Jan. 1914. He was graduated at Jefferson College, Canonsburg, Pa., in 1856; and for a time practised law. He served in the Federal army, 1861–64; and was retired with the rank of brigadier-general of volunteers (22 Dec. 1864). He then resumed the practice of law; became major-general of the Pennsylvania State militia; was defeated as Republican candidate for governor in 1882; elected in 1887; president of the board of trustees of the Pennsylvania State College; vice-moderator of the Presbyterian General Assembly in 1888 and 1895, and member of the President's commission on investigation of the War Department in 1898.

**BEAVER, Philip,** English naval officer: b. in Lewknor, Oxfordshire, England, 28 Feb. 1766; d. Table Bay, South Africa, 5 April 1813. He served during the American Revolutionary War in the royal navy. After the war he undertook to establish an agricultural colony on Bulama Island, on the west coast of Africa, and in April 1792 left England with three ships and 275 white colonists, expecting that the latter would not only cultivate the soil, but would do much toward civilizing the negroes. The enterprise proved a failure and he returned to England in 1794. Subsequently he distinguished himself in the naval service.

**BEAVER,** Pa., borough and county-seat of Beaver County, on the Ohio River, and the Pennsylvania and the Pittsburgh and Lake Erie railroads, 28 miles northwest of Pittsburgh. It has natural gas, abundant water power and municipal waterworks, large coal and oil shipping interests, a public park, national bank and daily and weekly newspapers and is the seat of Beaver College (Methodist Episcopal), founded 1853. Beaver dates from a settlement of 1790. The late United States Senator Matthew S. Quay resided here. Pop. 12,191.

**BEAVER,** a large aquatic rodent animal of the northern part of the world named by Linnæus *Castor fiber,* and representing the family *Castoridæ.* Some naturalists maintain that the American beaver is specifically different from that of the Old World, and is therefore entitled to its specific name of *Castor canadensis.* All varieties agree so closely that there is little need of any such classification. It is distinguished from its nearest relatives, the marmots, not only by adaptation to an aquatic life, and the possession of large, fully webbed hind feet, which form the principal instrument for swimming, but especially by its extraordinary tail, which is exceedingly broad and cov-

ered with a horny integument resembling scales. A large beaver is about two feet in length from the root of the tail to the nose, and the tail will be nearly a foot long. Such a one will weight about 35 pounds. Its flesh is edible, but not particularly good. The fur is exceedingly close and fine, and when freed from the long hairs that are scattered through it and overlie the under coat, forms one of the most valuable furs of commerce and one which figured largely in the early history of North America. It is owing, indeed, to the eagerness with which men have sought for this valuable commodity, going farther and farther into the wilderness in search of the animal, that the beaver has almost disappeared from large regions where it was once numerous. Originally it was widespread throughout Europe and northern Asia, but became extinct in the British Islands in the 12th century, and it remains elsewhere in Europe only in a few of the wilder streams of Norway and some of the tributaries of the Rhone and the Danube, where it is under royal protection. In some cases colonies of captives have re-established themselves in parks, notably that of Lord Bute, in England. It still exists, however, in eastern Siberia, whence a large number of its skins are annually sent to market.

When America was first entered by Europeans, the beaver was found inhabiting almost all of the woodland streams of the whole northern continent, from the Arctic Circle down to central Mexico. Its temperament and manner of life made it an easy prey and prevented it from adapting itself to changed conditions as did its neighbor, the muskrat. It rapidly disappeared, therefore, wherever civilization progressed or trapping was systematically carried on, and now no beavers are to be found south of the rivers that flow into Hudson Bay, except in the northern parts of the Rocky Mountains and in a few remote and scattered places like the forests of Maine and the Lake Superior region, where they are more or less protected by law. A few survive, nevertheless, in the wild ranges of the southern Alleghenies and along the borders of Mexico. The principal use to which beaver fur was put was for the making of hats; and it is probable that had not the method of making hat-coverings from silk been discovered, the animal would long ago have become extinct, and also its South American substitute, the coypu or nutria.

The life of the beaver is remarkably interesting on account of the skilful structures by which it keeps itself surrounded with a sufficient depth of water, and so maintains access to a continuous supply of food. The food of the beaver consists mainly of the bark of hardwood trees, such as the maple, linden, birch, poplar and the like. It never eats the bark of the coniferous trees, and beavers are not found living in forests composed entirely of coniferous trees, nor are beavers able to live in a treeless country. They are gregarious and dwell in colonies, which in favorable circumstances may persist for centuries. From time to time a pair of young beavers will wander away from such a colony and seek a new place in which to start afresh. They will choose a sluggish stream in the woods, preferably where the ground is low and level, and there will dig for themselves a burrow in the bank, the entrance of which is below the surface of the water. The tunnel will lead upward into the earth above the level of high water, and there be enlarged into a chamber in which will be placed a bedding of grass, etc. They are likely to make an opening from this chamber into the air, and, as if for defense or concealment, will pile over this opening a little heap of brush, in which perhaps may be seen the germ of the architectural ability which the species have so highly developed. It is necessary to their scheme of life that the water in the stream should never fall so low in summer as to expose the entrance of the burrow; moreover, it is necessary that this water should be so deep that in winter the ice will not freeze to the bottom, but that, on the contrary, there shall remain room enough between the ice and the bed of the creek for them to store there a supply of winter food. In order to maintain this requisite level of water the beavers throw a dam across the stream below their settlement, holding the water back to a sufficient height. For this purpose they choose a place where the water is not more than 2½ feet deep and the bottom is firm, and beginning in the centre of the channel they place there, lengthwise of the current, a number of long sticks which they hold down by piling upon them mud and stones, moved into place with their dexterous fore feet. They procure these poles by cutting off small trees with their front teeth, which are exceedingly large and strong and are faced with a hard yellow enamel. As the back part of the tooth consists of softer material, it wears away more rapidly, leaving the front with a chisel-like edge, which is always sharp. Standing on their hind feet, they gnaw round and round the stem of a tree until it falls; and are able to cut down trees 18 inches in diameter, but this is only done in procuring their winter supplies. From its foundation in the centre the dam is carried each way to the shore. As the beavers increase in number and the young ones grow up, they settle in the immediate neighborhood until after a few years a considerable colony will have arisen. During all this time work progresses upon the dam, each beaver gathering drift-wood, branches and logs from the shore, stones, mud, pieces of sod and everything available for the purpose, and working it into the structure of the dam. The work is carried on only at night and especially on pleasant moonlight nights, when they seem to be extremely busy from sunset till sunrise. There is no superintendence, but each one possessed with an instinct for industry does whatever seems to it best. The result is a mere tangled heap, having a long slope and comparatively tight surface on the upper side, which sometimes in a low, swampy region, will stretch for several hundred feet and hold back a large pond or morass, largely grown up to grass, but having many channels running through it. Meanwhile each family of beavers has erected for itself upon the bank of the pond or upon some islet adjacent to one of the channels, a conical house or lodge, the interior of which may be a room six or seven feet in breadth, which has no opening into the air, but is entered from beneath the water by two channels, one of which is commonly used, while the other forms a means of escape in case of invasion by a mink or some other aquatic enemy. These houses are more solidly constructed than even

the dam; and when frozen in winter are so thick and strong that nothing less than a bear is able to break into them. These houses are largest and strongest in the cold northern regions. During the summer beavers go ashore and obtain from time to time such bark as they want for food, and also feed largely upon the roots and stems of the flags, lilies and other water plants. In winter, however, when the pond is covered with ice and the banks with snow, the beavers would be unable to obtain such food, and to escape starvation are obliged to store in the autumn a sufficient supply to last them through the winter. They do this by felling large trees near the water's edge and cutting them up into such portions as they can manage to roll or drag into the water. These are floated away and sunk at the doors of their houses, where they are weighted or stuck into the mud to prevent their floating away, until a sufficient pile has been procured. Piece by piece this store is taken into the house during the winter, and, the bark having been eaten off, the sticks are thrown out to be used in the spring as material for repairing and extending the dam.

It will be apparent that a colony of beavers would soon exhaust the supply of trees bearing edible bark within reach of the shore of their stream, unless they had some means of reaching new and more distant supplies. In truth, where the banks are steep, this soon happens, and the beavers must then seek a new place. Where the forest is low and level, however, they will excavate canals which are gradually extended farther and farther into the woods on each side of the pond, and so enable themselves to reach more and more fresh trees. In some of the swampy forests about the headwaters of the Mississippi, which was perhaps the headquarters of beaver life in this country, these canals have been known to extend several hundred feet, and in such places colonies of beavers have maintained an existence of more than 200 years. These channels are kept free from weeds and of a proper depth; and the most important service which the dam renders is to maintain the right level of water in these canals, so that they may always be used as the avenues of the industrious community.

The American beaver seems to have carried its architectural work to a higher degree of perfection than the European beaver was ever known to do, although in Siberia, where similar climatic conditions prevail and it is necessary for them to erect houses impervious to the great cold and to the attacks of marauding animals, they come near to equalling their American cousins. There is little record of such structures being made primitively in central Europe, and the beavers now living in the streams of Germany and Austria make few attempts at either dams or houses but are content to dwell in their bank-burrows.

The beaver thrives in confinement and there are colonies in the zoological gardens of the larger cities. In 1913 for the first time beavers bred in their pond in the New York Zoological Park.

The substance called *castoreum* is obtained from two glandular pouches in the beaver, closely connected with the organs of reproduction, and probably of service in attracting the sexes to one another in the rutting season. It is a secretion having a powerful, peculiar, pungent odor and was formerly in demand for medical purposes. At present its only use is as a scent-bait for traps. Fossil remains of beavers have been found as far back as the middle of the Tertiary period. Fossils of small-sized species with some distinctive peculiarities occur in the Miocene rocks of the western United States; and a huge beaver (*Trogontherium*) existed in Europe in the Pliocene age. Consult Harting, 'British Animals Extinct within Historic Times' (London 1880); Martin, H. T., 'Castorologia' (Montreal 1892); Mills, E. A., 'In Beaver World' (Boston 1913); Morgan, 'The American Beaver and his Works' (Philadelphia 1868); Ingersoll, 'Life of Mammals' (New York 1907); Seton, 'Northern Mammals' (New York 1909).

**BEAVER DAM**, Wis., city of Dodge County, 64 miles northwest of Milwaukee, situated on Beaver Dam Creek, at the outlet of Beaver Lake, and on the Chicago, M. & St. P. and C. N. W. railroads. It is the seat of Wayland Academy, Wagner Musical College and also a business college. It has a public library, an armory, opera house, city hall, four ward schools and one high school, three banks and taxable property to the value of $4,868,345, and several parks. It is an agricultural district and has a considerable trade; it is also well provided with water power and has numerous manufacturing interests, including flour and woolen mills, canning factories and breweries, and manufactures of malleable iron ranges, seeding machines, silo, boxes, shoes and machinery, etc. Beaver Dam was settled in 1841 and incorporated in 1856. The revised charter of 1889 provides for a mayor and a city council, to be elected biennially. Pop. (1910) 6,758.

**BEAVER DAMS, Battle of,** in the War of 1812. After the battle of Stony Creek (q.v.) the American army remained inactive some time, but on 23 June 1813 Gen. John P. Boyd (q.v.), then in command at Niagara, sent Col. C. G. Boerstler with 400 or 500 troops and two guns to dislodge a British force at Beaver Dams, about 18 miles from Fort George. On 24 June Boerstler began the march but when in the woods found himself surrounded by a force of British and Indians, numbering only 200, according to British authorities. Boerstler attempted to retreat but found escape cut off and therefore surrendered his entire force. Practically nothing more was done in this vicinity for many weeks. Consult 'American State Papers, Military Affairs' (Vol. I, p. 449); Adams, Henry, 'The United States' (Vol. VII, pp. 162–63); Armstrong, John, 'Notices of the War of 1812' (Vol. I, p. 142); Fay, 'Official Accounts' (pp. 112–13); Lossing, 'War of 1812' (pp. 619–20); Wiley and Rines, 'The United States' (Vol. V, pp. 407–08).

**BEAVER FALLS**, Pa., city in Beaver County, situated on the west bank of the Beaver River, about five miles from its confluence with the Ohio River, 31 miles by rail northwest of Pittsburgh, and seven miles north of Beaver, the county-seat, and on branches of the Pittsburgh & L. E. and Pennsylvania railroads. The water power furnishes excellent facilities for manufactories; there is an abundant supply of coal and natural gas, and the

manufactures consist of iron bridges, axes, saws, glassware, gas engines, steel products, pottery and automobile accessories. The United States census of manufactures for 1914 recorded 59 industrial establishments of factory grade, employing 2,984 persons, of whom 2,639 were wage earners, receiving annually $1,616,000 in wages. The capital invested aggregated $9,481,000, and the value of the year's output was $7,963,000: of this $3,741,000 was the value added by manufacture. There are four banks, a Carnegie library, Providence Hospital and a commodious post-office building. Beaver Falls is also the seat of Geneva College (Reformed Presbyterian). Religious services are held in 17 church edifices. Beaver Falls was settled about 1800 by a few families of pioneers, and was called Brighton until 1868, when it was incorporated as a borough. In 1913 it adopted the commission form of government. Until 1868 the town was only a small village, but in that year the Harmony Society bought up nearly the entire tract of land and laid it out into lots, thus starting the growth in population, until it now is the largest town in Beaver County. Pop. 13,000.

**BEAVER ISLANDS,** a group of islands situated in the north part of Lake Michigan in Charlevoix County, and interesting as the scene of a short-lived Mormon colony. The largest town, Saint James, on Big Beaver Island, was settled in 1847 by James J. Strang, a Mormon elder, driven away from the parent Mormon community because his claims conflicted with those of Brigham Young. In the little colony which he called Saint James, after himself, Strang exercised the authority of king and high priest, and was implicitly obeyed. In 1849 he introduced polygamy, which did not spread rapidly and led to withdrawals and troubles with the "gentiles." Strang was assassinated in 1856 and the colony dispersed. There are several lighthouses on the island. Pop. of Saint James about 650; of Peane township, 375.

**BEAVER STATE,** a popular designation of Oregon.

**BEAVERBROOK, Sir William Maxwell Aitken,** 1st baron, Canadian financier: b. Newcastle, New Brunswick, 25 May 1879. He is the third son of the Rev. William Aitken, a Presbyterian minister. He received his education at the public school of Newcastle, and afterward took a short course of law at Chatham; engaged for a time in insurance work, and became a member of the Montreal Stock Exchange in 1907. He has been an active force in finance, organized a number of business consolidations and established a private banking business in 1911. His rise has been meteoric. He is described as a financial genius, and the ablest young man the Canadian financial world has seen in many years. In 1910, after his departure from Canada, he was elected Unionist member for Ashton-under-Lyne, in the British House of Commons, which constituency he continued to represent until his elevation to the peerage in 1917 as Baron Beaverbrook. He was official "eye-witness" with the Canadian Expeditionary forces during the European War, and is author of 'Canada in Flanders' (Vol. I, 1915; Vol. II, 1917).

**BEAVERWOOD.** See Magnolia.

**BEAZLEY, Charles Raymond,** English historian and geographer: b. Blackheath, 3 April 1868. Graduating from Oxford, he was appointed to the chair of history at the University of Birmingham. His first work of importance was 'The Dawn of Modern Geography' (1897-1906), for which he was awarded the Gill Memorial of the Royal Geographical Society in 1907. In 1908 he lectured at several American universities, being Lowell lecturer in Boston. Aside from his many contributions to leading monthly periodicals, he has written 'James of Aragon' (1890); 'Henry the Navigator' (1895); 'John and Sebastian Cabot' (1898); 'Voyages of Elizabethan Seamen' (1907); 'Introduction to Chronicle of Novgorod' (1915).

**BEBEERINE,** an uncrystallizable basic substance, $C_{19}H_{21}NO_3$, extracted from the bark of the bebeeru or greenheart-tree (*Nectandra rodiæi*), of Guiana. In pharmacy, the sulphate of bebeerine is a valuable medicine, being used, like quinine, as a tonic and febrifuge. Unfortunately, owing to the supplies of the bark being uncertain, the drug is sometimes scarce and difficult to obtain. Bebeerine is thought, by some chemists, to be identical with buxine.

**BEBEK,** a village on the Bosporus, five miles north of Constantinople, of which city it is a suburb. It stands on the site of ancient Chelæ; in the adjoining bay once stood a temple to Diana Dictynna. The picturesque situation of the place and the beauty of the surroundings made Bebek a favorite resort of various sultans. Selim I built a summer palace on the water-side, known to Europeans as the Palace of Conferences, where ambassadors were received in secret audience. On the top of the hill is the college founded by the late Christopher R. Robert of New York, and named for him Robert College (q.v.).

**BEBEL,** bā'bĕl, **Ferdinand August,** German Socialist leader: b. Deutz-Koeln 22 Feb. 1840; d. Passugg, Switzerland, 14 Aug. 1913. The son of a Prussian-Pole who was a non-commissioned officer in the Prussian infantry, Bebel was born in military barracks and apprenticed as a boy to a wood-turner. Like most German workmen at that time, he traveled extensively in search of work. At Salzburg, where he lived for some time, he joined a Roman Catholic workmen's club. When in Tyrol in 1859 he volunteered for service in the war against Italy, but was rejected; and in his own country he was rejected likewise as physically unfit for the army. In 1860 he settled in Leipzig as a master turner, making horn buttons, and speedily drifted into the political movements which were then beginning, but as a radical, not a socialist. He fell under the influence of Wilhelm Liebknecht (d. 1900), in 1864, and was converted to the doctrines of Marx (q.v.). In 1867 he was returned to the North German Parliament, and two years later helped to found the German Social Democratic party. In 1870 he spoke in Parliament against the continuance of the war with France and subsequently denounced the annexation of Alsace and Lorraine. He was arrested for high treason, but acquitted; in 1872, however, he was again prosecuted and sentenced to two

years' confinement in a fortress, and this and other terms of imprisonment enabled him to make up for his lack of elementary education. He remained a member of the Reichstag from 1871 till his death, except during 1881-83. In 1874 he took a partner and founded a small button factory, for which he acted as drummer, but in 1889 he gave up his business to devote himself wholly to politics, and from the death of Liebknecht he had been the head of the party, succeeding him also in the editorial chair of *Vorwaerts*, the often-suppressed socialist organ. Bebel was not a pure pacifist; he admitted that military service was a civic duty. In later years his socialism became more modern. He was unlike the typical demagogue, being small, slight and nervous, but he had an admirable voice and was an exceptionally logical and incisive orator. Besides his autobiography he wrote 'Our Aims' (1874); 'The German Peasant War' (1876); 'The Life and Theories of Charles Fourier' (1888); 'Women and Socialism: The Christian Point of View in the Woman Question' (1893).

**BEBEL, Heinrich,** German humanist: b. *1472*; d. 1518. He was an alumnus of Cracow and Basel universities, and from 1497 professor of poetry and rhetoric at Tübingen. His fame rests principally on his 'Facetiæ' (1506), a curious collection of bits of homely and rather coarse-grained humor and anecdote, directed mainly against the clergy; and on his 'Triumph of Venus,' a keen satire on the depravity of his time.

**BEC,** a celebrated abbey of France, in Normandy, near Brionne, now represented only by some ruins. Lanfranc and Anselm were both connected with this abbey.

**BECCAFICO,** bĕk-ä-fē'kō, the Italian name of the small olive-brown garden-warbler (*Sylvia hortensis*), called in England "petty-chaps," which has the habit of pecking holes in the rind of ripening figs and other fruits, in search of small insects. The damage done is very slight. These birds were eaten with much delight by the ancient Romans, and are still in high favor on Grecian, French and Italian tables, especially in Venice. An annual feast made on beccaficos is called Beccaficata. The term is also applied in continental Europe, rather indiscriminately, to different kinds of sylvan warblers when fat and in condition for the table.

**BECCAFUMI, Domenico di Pace,** bĕk-kä-foo'mē, dō'mä-nē'kō, surnamed MECHERINO, Italian painter: b. near Siena 1486; d. Siena *1551*. As a shepherd boy amusing himself with drawing figures on the sand, he attracted the attention of a wealthy man, from whom he takes the name of Beccafumi, who, discerning his genius, sent him to Siena to study drawing. He there saw, admired and tried to imitate the paintings of Perugino, but having heard much of Raphael and Michelangelo, obtained means from his patron to travel to Rome. After much study of the masterpieces of the Vatican he returned to Siena and enriched its churches and its city with many noble frescoes and painted an altar-piece in the museum there. He drew and colored well, possessed strong inventive powers, was thoroughly acquainted with perspective, and excelled particularly in foreshortening, but he was not free from mannerism, and his heads are in general deficient in both dignity and beauty. He was buried with pomp in Siena Cathedral, among some of the finest monuments of his genius. His paintings include 'Saint Catherine receiving the Stigmata' (Siena), 'Madonna and Child' (Berlin), 'Marriage of St. Catherine' (Rome), etc. He also gained distinction as a sculptor and engraver.

**BECCARIA, Cesare Bonesana-, Marchese di,** bĕk-kä-rē'ą, chä'sä'rĕ bō-nä-sä'ną, mär-kä'sĕ dē, Italian author: b. Milan 1735 (or 1738); d. 28 Nov. 1794. He was early excited by Montesquieu's 'Persian Letters,' to the cultivation of his philosophical talents, and was afterward favorably known as a philosophical writer by his noble philanthropic 'Crimes and Punishments' (1764), and several other works. With the eloquence of true feeling and a lively imagination he opposes capital punishments and torture. This work led to the establishment of more correct principles of penal law, and contributed to excite a general horror against inhuman punishments. He is also known in Italy as the author of a philosophical grammar and theory of style, 'Ricerche intorno alla Natura dello Stilo' (Milan 1770), and of several good treatises on style, rhetorical ornament, etc., contained in the journal *Il Caffé*, edited by him in conjunction with his friends, Visconti, Verri and others. In 1768 a chair of political philosophy was created for him at Milan.

**BECCARIA, Giovanni Battista,** jō-vä'nē bät-tēs'tą, Italian philosopher: b. Mondovi 1716; d. 27 April 1781. He went to Rome in 1732, where he studied, and afterward taught grammar and rhetoric; at the same time applying himself with success to mathematics. He was appointed professor of philosophy at Palermo, and afterward at Rome. Charles Emmanuel, King of Sardinia, invited him to Turin in 1748, to fill the professorship of natural philosophy at the university there. He paid much attention to the subject of electricity, and published 'Natural and Artificial Electricity' (Turin 1735), besides many other valuable works on this subject. In 1759 the King employed him to measure a degree of the meridian in Piedmont.

**BECERRA, Gasparo,** bĕ-thĕr'rą, gäs-pä'rō, Spanish artist: b. Baeza, Andalusia, 1520; d. Madrid 1570. He studied for some time in Rome under Michelangelo and others, and on his return became sculptor and painter to Philip II. He adorned the palace of Madrid with several frescoes, and also executed works in sculpture and architecture.

**BECHE,** bāsh, SIR **Henry de la,** English geologist: b. 1796; d. 1855. He founded the geological survey of Great Britain, which was soon undertaken by the government, De la Beche being appointed director-general. He also founded the Jermyn Street Museum of Economic or Practical Geology, and the School of Mines. His principal works are 'Geology of Jamaica'; 'Classification of European Rocks'; 'Geological Manual'; 'Researches in Theoretical Geology'; 'Geology of Cornwall, Devon, and West Somerset,' etc.

**BÊCHE-DE-MER,** bash-dė-mār, the French name for the dried flesh of holothurians. It is largely cured in the South Sea Islands.

**BECHER, Johann Joachim,** bĕH'ėr, yō'hän yō'ä-HĭM, German chemist: b. Speyer 1635; d. 1682. He traveled and resided in various parts of Germany, Holland, Italy, Sweden and Great Britain, investigating Cornish and Scotch mines. He wrote a number of works on chemistry, the chief of which is entitled 'Physica Subterranea.' In it he expounds his views on the composition of inorganic bodies, the constituents of which, according to him, are three earthy principles, the vitrifiable, the combustible and the mercurial. The metals consist of these three earths in different proportions, and whenever a metal is calcined the combustible and mercurial earths are expelled, and the vitrifiable earth forms the residual calx. When these principles are combined with water different salts are formed, and a fundamental acid, which exists in all the others. This theory was subsequently developed by Stahl, who, by means of the principle of phlogiston (q.v.), explained not only the calcination of metals, but the phenomena of combustion in general.

**BECHER, Siegfried,** Bohemian statistician and economist: b. Plan, Bohemia, 28 Feb. 1806; d. Vienna, 4 March 1873. He studied first in Prague, then in Vienna, then, in 1831, entered the government service, but four years later was appointed professor at the Polytechnic Institute in Vienna. In 1848 he became attached to the Ministry of Commerce, for which he made a trip of investigation in Germany and Belgium the following year. Among his important works are 'Das österreichische Münzwesen von 1524 bis 1838 in historischer, statistischer und legislativer Hinsicht' (2 vols., Vienna 1838); 'Statistische Ubersicht des Handels der österreichischen Monarchie mit dem Auslande während der Jahre 1829–38' (Stuttgart 1841); 'Die deutschen Zoll-und Handelsverhältnisse zur Anbahnung der österreichisch-deutschen Zoll-und Handelseinigung' (Leipzig 1850); 'Die Volkswirtschaft' (Vienna 1853).

**BECHSTEIN, Johann Matthäus,** beH'stīn, yō'hän mä-tā'oos, German naturalist: b. Waltershausen, Gotha, 1757; d. 1822. He studied theology for four years at Jena, but never felt in his element unless hunting in the fields or roaming the forest. After teaching for some time he resolved to devote himself to his favorite pursuits, and in 1800 the Duke of Saxe-Meiningen made him director of the Forest Academy of Dreissigacker, in the vicinity of his capital. This academy, under Bechstein's management, became one of the most celebrated establishments of the kind in Germany. His chief work is his 'Natural History of Germany,' in four volumes. In Great Britain he is best known by a treatise on singing-birds.

**BECHSTEIN, Ludwig,** lood'vĭH, German poet and novelist: b. 1801; d. 1860. He is chiefly remembered for 'The Legend Treasure and the Legendary Cycles of Thuringia' (1835–38); 'German Fairy-Tale Book' (1845, 41st ed., 1893); and others. Among his epical poems are 'The Children of Haymon' (1830); 'The Dance of Death' (1831); 'New Natural History of Pet Birds' (1846), a humorous didactic poem; and 'Thuringia's Royal House' (1865). Of his numerous novels, chiefly historical, the best known is 'Journeys of a Musician' (1836–37).

**BECHUANALAND,** bĕt-choo-ā'nā-lănd, south Africa, name formerly applied to the region inhabited by the Bechuanas. It included (1) the crown colony of Bechuanaland, with an area 51,524 square miles and a population of 99,553, annexed to the Cape Colony in 1895, and since 1910 one of the divisions of the province of the Cape of Good Hope in the union of South Africa; (2) the Bechuanaland Protectorate (q.v.).

**BECHUANALAND PROTECTORATE,** South Africa, the territory lying between the Molopo River on the south and the Zambesi on the north, and extending from the Transvaal province and Matabeleland on the east to (German) southwest Africa. Its area is about 275,000 square miles. The country forms portion of an elevated plateau 4,000 to 5,000 feet above the level of the sea, and though so near the tropics, is very healthful for Europeans. In winter there are sharp frosts and some years snow falls. The rains fall in summer, and then only the rivers are full. Cattle rearing and agriculture (production of maize and Kaffir corn) are the chief industries. Sheep thrive in some parts, but it is not a wheat country on account of the summer rains. The country takes its name from the widely spread race of people called Bechuanas, who belong to the great Kaffir race, and are divided into tribal sections, each of which has a chief. The most important tribes are the Bamangwato (35,000), under the chief Khama, whose capital is Serowe (pop. 17,000), 40 miles west of the railway line at Palapye road; the Bakhatla (11,000) under Lenchwe; the Bakwena (13,000) under Seckhele; the Bangwaketse (18,000) under Gaseitsiwe; the Batawana under Mathibi; and the Bamaliti (4,500) under Baitlotle, who is acting during the minority of Seboko, the eldest son of the late chief Mokgosi. The country can be reached from Cape Town, Port Elizabeth, Durban, Delagoa Bay and Beira, the Rhodesia Railway's section of the "Cape-to-Cairo" line traversing the country and passing through Vryburg, Mositlane, Mafeking, Pusani, Kalakani, Linchwe, Magalipsi, Palachwe, Tate and Buluwayo. There are extensive forests to the northeast, and to the west lies the Kalahari desert, which only requires wells dug to make it inhabitable. The province of Stellaland is inhabited principally by Boers. The Bechuanas are a black race possessing a language in common with the Bantu races of south Africa, extending as far north as the equator. Their ancestors are said to have come from the north, and progressing southwest, met the Hottentots from the Cape of Good Hope journeying north. Since 1832 they have been at enmity with the Matabele, and in later years the Transvaal Boers on one pretext or another endeavored to occupy their country. During the native risings in 1878 the Bechuanas invaded Griqualand West, and were in turn subdued by British volunteers as far as the Molopo. When the British government withdrew from Bechuanaland in 1880, the natives, being helpless, were left to the mercy of the Boers of the Transvaal, whose harsh treatment in 1882 and 1883 led to the Bechuanaland expedition in 1884. At the

beginning of the 19th century the Bechuanas were further in advance in civilization than other nations of south Africa and they are still ahead in this respect. In 1885, the territory was declared to be within the British sphere; in 1889 it was included in the sphere of the British South Africa Company, but was never administered by the company; in 1891 a resident commissioner was appointed, and in 1895, on the annexation of the crown colony of British Bechuanaland to the Cape of Good Hope, new arrangements were made for the administration of the Protectorate, and special agreements were made in view of the extension of the railway northward from Mafeking. Each of the chiefs rules his own people as formerly, under the protection of the King, who is represented by a resident commissioner, acting under the high commissioner for South Africa. The headquarters of the administration are in Mafeking, in the Cape province, where there is a reserve for imperial purposes, with ample buildings. There are assistant commissioners at Gaberones in the southern, and Francistown in the northern, portion of the Protectorate. There were 7 European and 37 native schools in operation with government assistance in 1915. The subsidized schools for Europeans are situated at Francistown, Serowe, Megalapwe, and at Lobatsi, Hildarale and Pitsani. The telegraph from the Cape of Good Hope to Rhodesia passes through the Protectorate, and is owned by the British South Africa Company. Pop. 125,350, of whom 1,692 are Europeans. Consult 'Annual Report on the Bechuanaland Protectorate' (London); MacNab, F., 'On Veldt and Farm' (2d ed., London 1900); Passarge, 'Die Kalahari' (Berlin 1904).

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**BECHUANAS,** an important tribe of south African negroes, inhabiting the Transvaal. Next to the Kaffirs they are the most significant of the many native tribes, politically considered. Though naturally of a peaceful disposition, they are very far advanced in military and civil organization. The cultivation of maize or corn and the herding of cattle are their main occupations, though they are also noted as workers in leather and metals. Their villages are far more advanced structurally than those of the Zulus, their habitations being divided into various rooms and constructed with the object of allowing circulation of air. The various communities, each under the rule of a local chief, are federated into powerful kingdoms, at the head of which is a king, or supreme chief. In color the Bechuanas are about the complexion of American Indians though considerably smaller in stature. See BECHUANALAND.

**BECK, SIR Adam,** Canadian statesman: b. (of German extraction), Baden, Ontario, 20 June 1857. He was educated at Galt Grammar School; was mayor of London, Ontario, 1902–04; and has been a member of the Provincial Parliament since 1902, occupying a place in the Whitney cabinet of 1905. He introduced into the legislature the measure for the establishment of the Hydro-Electric Power Commission of Ontario, of which he has been chairman since its inception. He is a noted breeder of horses. He was knighted in 1914.

**BECK, Christian Daniel,** German scholar and writer: b. Leipzig, 22 Jan. 1757; d. 13 Dec. 1832. Graduating from the University of Leipzig, he was later appointed professor of the Greek and Latin classics at the same establishment, assuming also the chair of history in 1819. In that year he also became editor of the *Allgemeines Reportorium der neuesten in- und ausländischen Litteratur,* a position he maintained until his death. He was also the founder of the Philological Society, which in 1809 became the Philological Seminary. Among his works are 'Anleitung zur Kenntnis der allgemeinen Welt- und Völkergeschichte' (4 vols., 1787–1807); 'Commentarii Historici Decretorum Religionis Christianæ et Formulæ Lutheranæ' (1801); 'Commentarii Societatis Philologicæ Lipsiensis' (1801–04); editions of Euripides, Pedo, Plato, Cicero, etc.

**BECK, Johann Tobias,** German theologian: b. Balingen, Württemberg, 22 Feb. 1804; d. Tübingen, 28 Dec. 1878. Graduating from the University of Tübingen in 1826, he was ordained a minister, but later accepted an appointment as professor of theology at Basel. In 1843 he went to Tübingen, where he filled the same position. He was one of the Tübingen faculty who was strongly opposed to the general radical tendency of that university, under the influence of F. C. Baur, the leader of the so-called Tübingen school. Beck was and remained absolutely orthodox. Among his works are 'Einleitung in das System der christlichen Lehre' (2d ed., Stuttgart 1870); 'Christliche Reden' (1834–70); 'Erklärung der zwei Briefe Pauli an Timotheus' (1879). Consult Adolf Schlatter's "J. T. Becks theologische Arbeittheologie" in 'Beiträge zur Förderung christlicher Theologie' (4 vols., 1904).

**BECK, Karl,** Austrian poet: b. Baja, Hungary, 1 May 1817; d. Vienna, 10 April 1879. His poems reflect the passionate temperament of his Hungarian countrymen in sonorous verses of consummate finish. Among his works are 'Nights' (1838); 'The Poet Arrant' (1838); 'Jankó' (1842), a romance in verse; 'Songs of the Poor Man' (1847); 'Jadwiga' (1863), a tale in verse; 'Mater Dolorosa' (1854), a novel.

**BECK, Lewis Caleb,** American scientist: b. Schenectady, N. Y., 4 Oct. 1798; d. Albany, N. Y., 20 April 1853. A man of remarkable and wide scientific attainments he graduated at Union College 1817, and became professor of chemistry and natural history at Rutgers College 1830–37 and 1838–53; professor of chemistry and pharmacy at Albany Medical College 1841–53; and was also State mineralogist of New York 1835–41. His publications include 'Gazetteer of Illinois and Missouri' (1823); 'Salt Springs at Salina' (1826); 'Mineralogy of New York' (1842), his most important work; and 'Botany of the United States North of Virginia' (1848). Consult Gross, 'American Medical Biography.'

**BECK, Richard,** German geologist: b. Aue, 24 Nov. 1858. After finishing the regular courses at Leipzig and Freiburg, he specialized in natural science. In 1883 he became a member of the geological survey of Saxony. In 1895 he resigned this position to become professor of geology at the Mining Academy of Freiburg. He was by this time becoming

widely known as a specialist on ore deposits, in which department he has made valuable contributions. His 'Lehre von den Erzlagerstätten' (1900) is a standard work which has been translated into most European languages, including an American edition in English (New York 1905). It treats of the physical features and origin of the metalliferous deposits.

**BECKE, Friedrich,** Austrian mineralogist: b. Prague, 31 Dec. 1855. After studying at Vienna, where he specialized in the natural sciences, he became there a lecturer on geology. In 1882 he was appointed professor at the University of Czernowitz. Eight years later he received a similar appointment at Prague, but soon after went to Vienna, where he became professor of mineralogy, succeeding Tschermak as such, of whose periodical *Mineralogische und Petrographische Mittheilungen* he became editor. He has published many papers on the science of geology and mineralogy, but he is best known on account of his researches in the field of rock-forming minerals and how they may be determined by means of their light-refractive properties. The results of these studies were published by the Vienna Academy (1893).

**BECKE, George Lewis** (Louis Becke), Australian novelist: b. Macquarie, N. S. W., 17 June 1857; d. Sydney, 17 Feb. 1913. He was trader, pilot, labor agent, recruiter for the Kanaka Pacific Islands labor trade, and contributor to the Australian, English and American press. Among his numerous works are 'By Reef and Palm' (1894); 'The Ebbing of the Tide' (1896); 'Rodman the Boat-steerer'; 'Edward Barry'; 'Tess, the Trader's Wife'; 'Ridan the Devil'; 'Breachley: Black Sheep'; 'Sketches from Normandy'; 'Pacific Tales' (1897); 'Helen Adair'; 'York the Adventurer' (1901); 'Tom Wallis' (1900); 'Wild Life in Southern Seas' (1897); 'Adventures of James Shervinton'; 'The Jalasco Brig'; 'By Rock and Pool'; 'Clunkie's Flat'; 'His Native Wife'; 'Under Tropic Skies'; 'The Adventures of a Supercargo'; 'The Gerards'; 'Notes from My South-Sea Log'; 'The Tapir of Banderah' (1901). He also wrote in collaboration with Walter J. Jeffery, 'The Mutineer'; 'A First Fleet Family' (1896); 'Admiral Philip' (1899); 'The Founder of Australia'; 'The Mystery of the Laughlin Isles'; and 'The Naval Pioneers of Australia.'

**BECKENHAM,** England, town of Kent, situated southeast of London. It is one of the English municipalities which have experimented in "municipal socialism," as it owns its electric lighting plant and public baths, and has charge of the work of a technical institute. It is a residential suburb of London, and its most noteworthy building is the church of Saint George, the tower of which was completed in 1903, and contains bells in memory of Cecil Rhodes. Pop. 31,692.

**BECKER, August,** German poet and novelist: b. 1828; d. 1891. He was the author of 'Young Friedel, the Minstrel' (1854), a lyrical epic; and of the novels 'The Rabbi's Bequest' (1866); 'Proscribed' (1868); 'The Carbuncle' (1870); 'My Sister' (1876), descriptive of the doings of Lola Montez and the events of 1848 in Bavaria; 'Painter Fairbeard' (1878); and 'The Sexton of Horst' (1889).

**BECKER, George Ferdinand,** American geologist: b. New York, 5 Jan. 1847. He was graduated at Harvard University in 1868; was instructor of mining and metallurgy in the University of California in 1875–79; was attached to the United States Geological Survey in 1879, and was special agent of the 10th census, 1879–83. He was appointed a special agent to examine into the mineral resources of the Philippine Islands in 1898. His publications include 'Geology of the Comstock Lode'; 'Statistics and Technology of the Precious Metals' (with S. F. Emmons); 'Geology of the Quicksilver Deposits of the Pacific Slope'; 'Age of the Earth,' etc.

**BECKER, Karl,** German statistician: b. Strohausen, Oldenburg, 2 Oct. 1823; d. 20 June 1896. In 1842 he received a commission in the army, and as such was also instructor in the Oldenburg Military Academy. In 1850 he was on the general staff during the campaign against Denmark. At the close of the war he entered the University of Berlin where he became interested in statistics. In 1855 he organized the statistical bureau of Oldenburg, of which he was director until 1872, when he became chief statistician of the German government. As such he was editor of the *Monatshefte zur Statistik des deutschen Reichs* and the *Statistischen Jahrbuches.* He was also the author of 'Zur Berechnung von Sterbetafeln an die Bevölkerungstatistik zu stellende Anforderungen' (Berlin 1874).

**BECKER, Karl Ferdinand,** German philologist: b. Lieser, 14 April 1775; d. Offenbach, 5 Sept. 1849. He first studied in the theological seminary at Hildesheim, then entered and was graduated from the University of Göttingen. In 1815 he began practising as a physician at Offenbach, at the same time establishing a private school. It was as instructor in his own school that he first became interested in philology, into which subject he made extensive researches and attempted to establish the theory that speech is an organism subject to the same critical analysis as other natural organisms, subject also to the same laws of development. This assumption was later discredited by Grimm and others, who showed conclusively that the science of philology must be largely based on ethnology and race history. The works of Becker include 'Die deutsche Wortbildung' (Frankfort 1824); 'Organismen der Sprache' (2d ed., Prague 1841); 'Der deutsche Stil' (Prague 1848).

**BECKER, Karl Ferdinand,** German organist and writer on music: b. Leipzig, 17 July 1804; d. there, 26 Oct. 1877. He was a student of Friedrich Schneider, being already an accomplished musician at the age of 14. At the age of 21 he was organist in Saint Peter's Church in his native city. In 1843 he was appointed professor of organ playing at the Leipzig Conservatory, which position he held for 13 years. It is not, however, so much on his talents as a musician that his fame rests as on his works on the theory of music. Among his important works are 'Systematisch-chronologische Darstellung der musikalischen Litteratur' (Leipzig 1836); 'Die Hausmusik in

Deutschland im 16, 17 und 18 Jahrhundert' (Leipzig 1840); 'Lieder und Weisen vergangener Jahrhunderte' (2d ed., Leipzig 1852). He was also a collaborator with Schumann in 'Neue Zeitschrift für Musik.'

**BECKER, Karl Friedrich,** German historian: b. Berlin 1777; d. there, 15 March 1806. He studied philosophy and history at Halle, then was for some time a teacher at Kottbus. On account of continued sickness he was unable for long to follow the profession of teaching, so he gave himself up entirely to historical writing, most of his books being of a popular character. Among his works are 'Erzählungen aus der Alten Welt für die Jugend' (3 vols., Halle 1801–03); 'Weltgeschichte für Kinder und Kinderlehrer' (9 vols., Halle 1801–05). This latter work has been often revised since and many editions have been published.

**BECKER, Karl Ludwig Friedrich,** German painter: b. Berlin, 18 Dec. 1820; d. there, 20 Dec. 1900. His early training was gained in Rome, Paris and Venice, where he studied under such masters as Von Klöber and Hess. His first original works were historical and mythological, though in his later paintings it is obvious that he was strongly influenced by the Venetian Renaissance. Among his notable works are 'Belisarius Begging' (1850), the frescoes in the Berlin Museum; 'The Doge in Council' (1864); 'Charles V Visiting Titian' (1873); 'In the Picture Gallery' (1874); 'Emperor Maximilian Receiving a Venetian Embassy' (1877).

**BECKER, Nikolaus,** German poet: b. Bonn, 8 Oct. 1809; d. Hunshoven, 28 Aug. 1845. His early training was in law, and for some years he held a position in a court. He is principally known as the author of the popular song "Rheinliedes." The song begins with the words, addressed to the French: "You should not have it, the free, German Rhine." So widespread did this refrain become that French poets replied, Alfred de Musset with "Nous l'avons eu, votre Rhin allemand." For this song the King of Prussia awarded the poet a prize of 1,000 thalers. Becker's other poems were published as a collection (Cologne 1841) but none of them attained much popularity and they have not generally been considered of a high order.

**BECKER, Oskar,** political fanatic: b. Odessa, Russia, 1839; d. Alexandria, Egypt, 1868. In 1861 he attempted, at Baden-Baden, to kill King Wilhelm I of Prussia, by shooting at him with a pistol at a distance of but three paces. The King fortunately escaped with only a slight wound in the neck. Becker's motive for the act was his belief that the King was unable to unite Germany. Though sentenced to 20 years' imprisonment he was pardoned by the King on condition of living out of Germany ever after.

**BECKER, Philip Johann,** German revolutionist: b. Frankenthal 1809; d. 1886. Beginning as a simple workingman, he soon became involved in the radical labor movements of his time and for his participation in a revolt in 1830 he was imprisoned. He then fled to Switzerland, which was the haven of revolutionary agitators and refugees. He was very prominent in the revolutionary upheavals that threatened nearly all the European countries during 1848. Becker organized, during that year, a body of fighting men with which to support Hecker, who was attempting to precipitate a revolution in Baden. When this failed, Becker led his forces to the support of the revolutionists in Rome and Sicily. This expedition also failed, whereupon he marched into the Palatinate and Baden, where uprisings had taken place, and participated in the thick of the fighting in which he showed himself possessed of not a little military skill. When these violent disturbances had subsided, Becker became attached to the Socialist International and was one of Karl Marx's strongest adherents. He has written 'Wie und Wann?' (1869).

**BECKER, Rudolf Zacharias,** German author: b. Erfurt, 9 April 1752; d. 28 March 1822. He first became known by an essay on the theme, "Is it useful to deceive the people?" which gained a prize from the Berlin Academy of Sciences in 1799. His theory was that happiness depended on the gratification of an innate desire for improvement. In 1782 he took charge of a school at Dessau and published a journal for youth. A work in two volumes, entitled 'A Little Book of Needful Help; or, Instructive Tales of Joy and Sorrow in the Village of Mildheim,' became such a favorite with the public that over 500,000 copies were soon disposed of. He also produced other works and journals, and the extensive transactions in them led him, in 1797, to set up a publishing and bookselling establishment at Gotha, which is still continued by his son. On 30 Nov. 1811 he was arrested by Davoust on suspicion of conspiring against Napoleon, and was imprisoned at Magdeburg till April 1813. On this imprisonment he wrote a book, which still has a historical value.

**BECKER, Wilhelm Adolf,** German archæologist: b. Dresden 1796; d. Meissen, 30 Sept. 1846. His early education was planned by his parents with the object of fitting him for a commercial career, but while studying at the University of Leipzig he acquired a strong taste for a life of study. In 1828 he was appointed professor of archæology at the University of Meissen; in 1842 he was appointed to the chair of classical archæology at Leipzig University. In his first two books, 'Gallus oder römische Scenen aus der Zeit Augusts' (Leipzig 1838) and 'Charicles oder Bilder altgriechische Sitte' (Leipzig 1840) he portrays the daily life of the ancients in the form of romances, plentifully supplied with footnotes. Both works have been translated into English by Frederick Metcalfe, and each has passed through numerous editions. His chief work, however, is 'Handbuch der römischen Alterthümer' (Leipzig 1843), which he did not live to complete, this being done by Marquardt.

**BECKER, Wilhelm Gottlieb,** German writer on art antiquities: b. Oberkallenberg, Saxony, 4 Nov. 1753; d. Dresden, 3 June 1813. Graduating from the University of Leipzig, he was appointed professor at the Dresden Ritterakademie in 1782. In 1795 he became director of the Dresden Gallery of Antiques and the Coin Cabinet. In 1805 he was also given charge of the famous Green Vault. His chief work is 'Taschenbuch zum geselligen Verg-

nügen' (Leipzig 1791–1814). He was also the author of 'Erholungen' (Leipzig 1796–1810); 'Augusteum' (Dresden 1805–09).

**BECKERATH, Hermann von,** German statesman: b. Krefeld, Prussia, 13 Dec. 1801; d. there, 12 May 1870. His youth was spent in learning the business of banking, after which he became the head of a banking firm which had considerable influence in German financing, especially in the Rhenish provinces. He began his political career by entering the Diet of his native province. In 1847 he served in the Prussian Diet, and the following year went as a deputy to the Frankfort Parliament, where he became one of the firmest advocates of the German confederacy. He became Minister of Finance in the German cabinet organized by the Parliament. When the reactionary Manteuffel Ministry came into power, he continued as a member of the Prussian Second Chamber and ranged himself steadfastly with the opposition. In 1852 he withdrew from politics, but six years later he was again elected to the Second Chamber. His ill-health, however, compelled him to decline the office. Consult Kopstadt's biography, 'Hermann von Beckerath' (Brunswick 1875).

**BECKERS, Hubert,** German philosopher: b. Munich, 4 Nov. 1806; d. 11 March 1889. Graduating from the University of Munich, he was, in 1832, appointed professor of philosophy at the Lyceum at Dillingen. In 1847 he was appointed to the chair of the same subject at the University of Munich. Most of his writings are devoted to expounding the theories of Schelling. These include 'Denkrede auf Schelling' (Munich 1855): 'Über die Bedeutung der Schellingschen Metaphysik' (Munich 1861); 'Cantica Spiritulia' (Munich 1845–47); 'Aphorismen über Tod und Unsterblichkeit' (Munich 1889).

**BECKET, Thomas à,** archbishop of Canterbury, the Saxon hero, priest and martyr of England in the reign of Henry II: b. London 1119, or, according to some writers, 21 Dec, 1117; d. Canterbury, 29 Dec. 1170. He was the son of Gilbert Becket, a merchant of London. He was first educated by the canons of Merton, and continued his studies in the schools of Oxford, London and Paris. On the death of his father he was admitted into the family of Theobald, archbishop of Canterbury, and, with his permission, went to the Continent for the purpose of studying the civil and canon law. He attended the lectures of Gratian at Bologna, and of another celebrated professor at Auxerre. He won high favor with the King through having obtained from the Pope, while acting as agent for Theobald, letters prohibitory of the crowning of Eustace, the son of Stephen, by which that design was defeated (1152). This service not only raised Becket in the esteem of the archbishop, but in that of King Henry II, and was the foundation of his high fortune. In 1155 he was appointed high-chancellor and preceptor to Prince Henry, and at this time was a complete courtier, conforming in every respect to the humor of the King. He was, in fact, his prime companion, had the same hours of eating and going to bed, held splendid levees, and courted popular applause. In 1159 he made a campaign with the King in Toulouse, having in his own pay 700 knights and 1,200 horsemen; and it is said he advised Henry to seize the person of Louis, King of France, shut up in Toulouse without an army. This counsel, however, so indicative of à Becket's energy, being too bold for the lay counsellors of one of the boldest monarchs of the age, was declined. In the next year he visited Paris to treat of an alliance between the eldest daughter of the King of France and Prince Henry, and returned with the young princess to England. He had not enjoyed the chancellorship more than four years when his patron Theobald died, and King Henry was so far mistaken as to raise his favorite to the primacy, on the presumption that he would aid him in those political views, in respect to Church power, which all the sovereigns of the Norman line embraced, and which, in fact, caused a continual struggle in England till its termination by Henry VIII. It is narrated that when Henry announced his intention of having Becket promoted to the primacy left vacant by the death of Theobald, Becket prophetically remarked: "I am certain that if, by God's disposal, it were to so happen, the love and favor you now bear towards me, would speedily turn into bitterest hatred."

Becket was consecrated archbishop in 1162, and immediately assumed an austerity of conduct which formed a very natural prelude to the course which he was to follow. Pope Alexander III held a general council at Tours in 1163, at which Becket attended and made a formal complaint of the infringements by the laity on the rights and immunities of the Church. On his return to England he began to act in the spirit of this representation, and to prosecute several of the nobility and others holding Church possessions, whom he also proceeded to excommunicate. At a council at Woodstock (1163) he successfully opposed the King on a point regarding taxation—the first case of this kind recorded in England. Henry, an able and politic monarch, was anxious to recall certain privileges of the clergy which withdrew them from the jurisdiction of the civil courts; and it was not without a violent struggle, and in the interests of peace, that Becket finally acquiesced. The King soon after summoned a convocation or parliament at Clarendon (1164), to the celebrated "constitutions" of which, although the archbishop swore that he would never assent, he at length yielded, but afterward refused to affix his signature, and by way of penance suspended himself from his archiepiscopal functions till the Pope's absolution could arrive. Finding himself the object of the King's displeasure, he soon after attempted to escape to France; but being intercepted, Henry, in a parliament at Northampton, charged him with a violation of his allegiance, and all his goods were confiscated. A suit was also commenced against him for money lent him during his chancellorship and for the proceeds of the benefices which he had held vacant while in that capacity. In this desperate situation he with great difficulty and danger made his escape to Flanders, and, proceeding to the Pope at Sens, humbly resigned his archbishopric, which was however restored. He then took up his abode at the abbey of Pontigny, in Normandy, whence he issued expostulatory letters to the King and bishops of Eng-

land, in which he excommunicated all violators of the prerogatives of the Church, and included in the censure the principal officers of the Crown. Henry was so exasperated that he banished all his relations and obliged the Cistercians to send him away from the abbey of Pontigny; from which he removed, on the recommendation of the King of France, to the abbey of Columbe, and spent four years there in exile.

After much negotiation a sort of reconciliation was patched up in 1170, which on the whole was to the advantage of Becket, who, being now restored to his see with all its former privileges, forthwith prepared to return. After a triumphant entry into Canterbury the young Prince Henry, crowned during the lifetime of his father, transmitted him an order to restore the suspended and excommunicated prelates, which he refused to do, for the reason that the Pope alone could grant the request, though the latter had authorized him to inflict the censure on them. The prelates immediately appealed to Henry in Normandy, who in a state of extreme exasperation exclaimed, "What an unhappy prince am I, who have not about me one man of spirit enough to rid me of a single insolent prelate, the perpetual trouble of my life!" These rash and too significant words induced four of the attendant barons, Reginald Fitz-Urse, William de Tracy, Hugh de Morville and Richard Breto, to resolve to wipe out the King's reproach. Having laid their plans, they forthwith proceeded to Canterbury, and having formally required the archbishop to restore the suspended prelates, they returned in the evening of the same day (29 Dec. 1170), and, placing soldiers in the courtyard, rushed with their swords drawn into the cathedral, where the archbishop was at vespers, and, advancing toward him, threatened him with death if he still disobeyed the orders of Henry. Becket, without the least token of fear, replied that he was ready to die for the rights of the Church; and magnanimously added, "I charge you in the name of the Almighty not to hurt any other person here, for none of them have been concerned in the late transactions." The confederates then strove to drag him out of the church, but not being able to do so on account of his resolute deportment, they killed him on the spot with repeated wounds, all which he endured without a groan.

The perpetrators of the deed repented and made pilgrimages to the Holy Land. Henry II did penance at the saint's tomb.

Thus perished Thomas à Becket in his 52d year, a martyr to the cause which he espoused, and a man of unquestionable vigor of intellect. He was canonized two years after his death, and miracles abounded at his tomb. In the reign of Henry III his body was taken up and placed in a magnificent shrine erected by Archbishop Stephen Langton; and of the popularity of the pilgrimages to his tomb the 'Canterbury Tales' of Chaucer will prove an enduring testimony. In September 1538, Henry VIII, who held the veneration with which à Becket was regarded in especial detestation, destroyed the shrine and, on what appears to be good evidence, had the martyr's bones burned. The names of many churches and hospitals, in order to conform to the royal commands, were changed from Saint Thomas the Martyr to Saint Thomas the Apostle. Consult for the sources of the life 'Materials for the History of Archbishop Becket,' edited for the Rolls Series by Robertson and Sheppard (London 1875–85); also 'Lives' by A. E. Abbott (London 1898), W. H. Hutton (ib. 1889), John Morris (2d ed., ib. 1885) and R. A. Thompson (ib. 1889). Tennyson's drama of 'Becket' has the martyr for its hero; Ward, 'Canterbury Pilgrimages' (London 1904).

**BECKETT, Arthur William, à,** English journalist and novelist: b. Fulham, 25 Oct. 1844; d. London, 14 Jan. 1909. Besides fulfilling other journalistic engagements he was on the staff of *Punch* 1874–1902, edited the *Sunday Times* 1891–95, and the *Naval and Military Magazine* 1896. In addition to several comedies he published 'Comic Guide to the Royal Academy,' with his brother Gilbert (1863–64); 'Fallen Amongst Thieves' (1869); 'Our Holiday in the Highlands' (1874); 'The Shadow Witness' and 'The Doom of Saint Quirec,' with Burnand (1875–76); 'The Ghost of Grimstone Grange' (1877); 'The Mystery of Mostyn Manor' (1878); 'Traded Out'; 'Hard Luck'; 'Stone Broke'; 'Papers from Pump Handle Court, by a Briefless Barrister' (1884); 'Modern Arabian Nights' (1885); 'The Member for Wrottenborough' (1895); 'Greenroom Recollections' (1896); 'The Modern Adam' (1899); 'London at the End of the Century' (1900).

**BECKFORD, William,** English writer, famous in his time for his immense wealth, eccentricities and literary talents: b. Fonthill, 29 Sept. 1759; d. Bath, 2 May 1844. When only 10 years old he was in receipt of an income, through the death of his father, of more than $500,000 a year. Under the direction of Lord Chatham he received a careful education at the hands of tutors, and at an early age gave evidence of unusual abilities. His first work, a satirical essay entitled 'Biographical Memoirs of Extraordinary Painters,' in which he ridiculed the English artists of his time, was published before he was 21 years of age. In 1783 he married Lady Margaret Gordon, daughter of the 4th Earl of Aboyne, who died in 1786. One of his daughters married the 10th Duke of Hamilton. He spent most of his time on the Continent; an account of some of his travels he published half a century later with the title 'Italy, with Sketches of Spain and Portugal' (2 vols., London 1834). He sat in the House of Commons from 1784–94, and from 1806–20, but took no interest in political affairs. He went to Portugal in 1794, where he bought an estate in the neighborhood of Cintra, and lived in familiar intercourse with the royal family of Portugal. After the lapse of some years he appeared again in England, and began in 1796 to erect a splendid edifice upon his estate of Fonthill, which he furnished with more than royal luxury, and continually enlarged with new buildings. Here he resided till 1822, when, owing to the loss of two large estates, which had been successfully claimed in chancery by other owners, he was obliged to sell Fonthill for £330,000. He then settled at Bath, where he began to occupy himself anew with building and collecting works of art. His literary fame rests upon his Eastern tale, 'Vathek,' which he wrote in French, composing it in three days

and two nights, during which he did not take off his clothes. It was published at Lausanne in 1787, and made a remarkable impression upon Byron. See VATHEK.

**BECKHAM, John Crepps Wickliffe,** American statesman: b. Bardstown, Ky., 5 Aug. 1869. He attended school at Roseland Academy, Bardstown, and Central University, Richmond, Ky., receiving degree of LL.D. from the university in 1902; served as page in the Kentucky house of representatives in the session of 1881–82; in 1888 became principal of the Bardstown public school and taught three years; studied law and began practice in 1893; same year was elected as representative of Nelson County to the general assembly; served as such in the sessions of 1894, 1896, 1897, 1898 and in the latter session was speaker of the house; in 1899 was Democratic nominee for lieutenant-governor on the ticket with William Goebel, candidate for governor, and in the contest before the general assembly of 1900 was declared elected lieutenant-governor at the same time that Goebel was declared elected governor. Upon the death of Governor Goebel, 3 Feb. 1900, he became governor, and at the special election on 6 Nov. 1900, was elected as the Democratic nominee to fill out the unexpired term of Governor Goebel, ending 8 Dec. 1903; in the State primary of 1903 was renominated and in the general election of November 1903 was re-elected for a full term, ending 10 Dec. 1907; in the State primary of November 1906 was nominated as the Democratic candidate for the United States Senate, to succeed J. B. McCreary, but in the general assembly of 1908 was defeated by W. C. Bradley, the Republican nominee; resumed, in 1908, the practice of law in Frankfort, Ky.; in the State primary of 1 Aug. 1914 was nominated by the Democratic party for the United States Senate, and in the general election of 3 Nov. 1914 was elected for the term beginning 4 March 1915. At the Democratic national conventions at Saint Louis, 1904, Denver, 1908, Baltimore, 1912, he was a delegate from the State at large, and member of the committee on resolutions. His term of service will expire 3 March 1921.

**BECKMANN, Johann,** German writer on agriculture and natural history: b. Hoya, Hanover, 4 June 1739; d. Göttingen, 3 Feb. 1811. He studied theology at Göttingen, but soon applied himself to natural philosophy and chemistry. For a short time he was professor of natural philosophy and history at a gymnasium in Saint Petersburg. He resigned this, and coming back through Sweden, made the acquaintance of Linnæus and was allowed to see how the Swedish mines were worked. Having returned to Göttingen, he was made professor of philosophy there in 1766, and in 1770 ordinary professor of economy, which office he held for 40 years. He published several scientific works, which once were popular, but the best known of his productions is called 'Contributions to the History of Discovery and Inventions,' of which several translations have been published in England, where (with corrections and additions extending it to the present time) it continues to be a favorite work.

**BECKWITH, SIR George,** English military officer: b. 1753; d. London, 20 March 1823. His scene of action was largely in America — in the United States and the West Indies. He fought with the English in the American Revolution in 1776–82, and was entrusted with important diplomatic commissions in 1782–91, as there was then no British Minister in the United States. In 1804 he was made governor of Saint Vincent, and four years later governor of Barbados. As England was then at war with France he organized an expedition and conquered Martinique, for which he obtained the thanks of the House of Commons. Later (1810) he conquered Guadeloupe, the last possession of the French in that part of the world. When he returned to England, after nine years' service in the West Indies, a set of silver plate was given to him by the legislature of Barbados, and the King conferred upon him armorial distinction.

**BECKWITH, James Carroll,** American portrait painter: b. Hannibal, Mo., 23 Sept. 1852; d. 24 Oct. 1917. He studied painting in Chicago, where his father was a merchant. In the late autumn of 1871 he became a student at the Academy of Design in New York, where he remained, under the direction of Professor Wilmarth, until 1873, when he sailed for Europe and became a pupil of Carolus-Duran, and also at the École des Beaux Arts, under Yvon. In 1878 he returned to New York, and with William M. Chase opened the new departments of painting and drawing at the recently established Art Students' League, where, for 18 years, he continued his work as instructor. In 1894 he was elected to the National Academy of Design, and is a member of the National Institute of Art and Letters. Portrait and genre painting gradually absorbed his time and attention, the result of which was that he finally abandoned teaching. He decorated one of the domes of the Manufactures Building at the Columbian Exposition of 1893. Among his best-known portraits are those of General Schofield, Judge Palmer, Colonel Appleton, Mark Twain, and the Ogden and Parish families. At the Saint Louis Exposition (1904) he exhibited 'The Nautilus' and portraits of Mrs. Beckwith and F. H. Hitch. His portraits hang in many private homes as well as in galleries and institutions throughout the United States; among others, Yale University, Johns Hopkins, West Point Military Academy, the Historical Societies of Massachusetts and New York, the Bar Association of New York, the Union, Union League, City, Racquet and Calumet Clubs of New York. The New York Public Library has a fine collection of his crayon and pencil drawings.

**BECKWITH, John Watrus,** American Episcopal bishop: b. Raleigh, N. C., 9 Feb. 1831; d. 24 Nov. 1890. He was graduated at Trinity College, Hartford, in 1852; ordained priest in 1855; labored in Mississippi and Alabama till after the close of the Civil War; was then called to the rectorship of Trinity Church, New Orleans; and while there was elected bishop of Georgia, being consecrated in Savannah, 2 April 1868. He was an eloquent preacher, and published several sermons and addresses.

**BECKX, Peter Johann,** 22d general of the Jesuits: b. Sichem, near Louvain, in the Flemish province of Brabant, Belgium, 8 Feb. 1795; d. Rome, 4 March 1887. At the age of 24 he entered the order of the Society of Jesus.

Upon the Duke Ferdinand of Anhalt-Köthen becoming a convert to Catholicism, he was appointed confessor at the ducal court, where he continued after the Duke's death with the Duchess Julia. On her removal to Vienna he accompanied her. In 1847 he became prosecutor for the Society in Austria. The following year the Jesuits were expelled from Austria and Beckx returned to Belgium, where he became rector of the Jesuit College at Louvain. Upon the return of the Jesuits to Austria, Father Beckx was made superior of Hungary. On 2 July 1853 he became general of the Order, being the successor of Father Roothan. The marvelous success with which the Jesuits established themselves in Austria and even in non-Catholic countries after the middle of the century was largely due to the abilities of Father Beckx as a diplomat. In 1884. when almost 90 years of age, he resigned his office. He was the founder of the *Civiltà cattolica* in Rome, the chief organ of the Order. He was also the author of the 'Month of Mary,' which was widely translated.

**BECKY SHARP,** the heroine in Thackeray's 'Vanity Fair.' She has been accepted as the type of the shrewd, conscienceless adventuress whose sole purpose is to rise in the world and who allows nothing to interfere with it.

**BECQUE, Henri François,** bĕk, ŏn-rē frăn-swā, French dramatist: b. Paris, 9 April 1837; d. 1899. He was the pioneer of realism on the Parisian stage producing 'The Prodigal Son' (1868); 'The Abduction' (1871); 'The ~~Ravens~~' (1882); 'The Parisian' (1885), etc.

**BECQUER, Gustavo Adolfo Dominguez,** Spanish poet: b. Seville, 17 Feb. 1836; d. Madrid, 22 Dec. 1870. When he was 10 years of age his father, a well-known painter, José Dominguez Becquer, died, leaving the orphan son to the care of a godmother. He was abandoned by his protectress, however, on account of his disinclination to fit himself for any profession. At the age of 18 he came to the Spanish capital, where he earned a precarious living for 15 years as a free lance journalist and translator of foreign books. During this period he produced some tales and a number of poems which stand out sharply from his general newspaper and hack work. His collected works were published after his death in Madrid (1885) with a biographical introduction by Correa. His prose tales and legends were published under the general title 'Leyendas españolas,' and are included in the fifth, enlarged edition of his works (3 vols., Madrid 1904). An English translation of the prose stories was made by Cornelia Frances Bates (New York 1909). Consult Mrs. Humphry Ward's article on Becquer in *Macmillan's Magazine* (1883) and Olmsted's introduction to his edition of Becquer's 'Legends, Tales and Poems' (1907).

**BECQUEREL, Alexandre Edmond,** bĕk-rĕl, ā-lĕx-ăndr ăd-mŏn, French physicist: b. Paris (son of Antoine César Becquerel, q.v.), 24 March 1820; d. Paris, 13 May 1891. He was decorated with the cross of the Legion of Honor in 1851, and was appointed professor of physics in the Conservatoire des Arts et Métiers in 1853. Besides his conjoint labors with his father he made important researches on the nature of light and its chemical effects, on phosphorescence, and on the conductivity and magnetic properties of many substances. He wrote 'Light, Its Causes and Effects' (1868).

**BECQUEREL, Antoine César,** French physicist: b. Chatillon-sur-Loing, 8 March 1788; d. Paris, 18 Jan. 1878. He studied in the Ecole Polytechnique, then, in 1808, entered the engineer corps of the army, with which he saw active service in Spain, under Marshal Suchet. In 1812 he returned to Paris, where he received the appointment of inspector of the Ecole Polytechnique, which position he held until 1815, when he devoted himself to private study. In 1837 he became professor of physics at the Musée d'histoire naturelle. Meanwhile he was actively engaged in research work, especially in the field of electricity and magnetism. He investigated and experimented in the laws governing the production of electricity by chemical action, the result of which was the shattering of Volta's theory of contact. His many discoveries in this department of science entitle him to be called one of the creators of electrochemistry. He was elected a member of the Paris Academy of Sciences and of the Royal Society of London. Among his chief works are 'Traité de l'électricite et du magnétisme' (1855); 'Elément d'électrochimie' (1843); 'Eléments de physique terrestre et de météorologie' (1847); 'Résumé de l'histoire de l'électricité et du magnétisme' (1858). Some of these later works were written in collaboration with his son Alexandre Edmond Becquerel (q.v.).

**BECQUEREL, Antoine Henri,** French physicist: b. Paris, 15 Dec. 1852; d. there, 25 Aug. 1908 (son of Alexandre Edmond, and grandson of Antoine César Becquerel, qq.v.). Like his distinguished grandfather, he studied at the Ecole Polytechnique, then became professor of physics at the Museum of Natural History in 1878. In 1895 he was appointed professor of the same subject at the Ecole Polytechnique. In 1889 he became a member of the Institute. After him have been named the rays radiating from uranium, for the discovery of which he was awarded the Rumford medal of the Royal Society of London. In 1903 he shared the Nobel prize for physics with M. and Mme. Curie, awarded them because of their researches in radio-activity. His investigations dealt chiefly with such subjects as the magnetic rotation of polarized light, phosphorescence, the ultra-red rays, light absorption, etc.

**BECSE,** bĕch'ĕ, Hungary, the name of two towns situated on the river Theiss. OLD BECSE is on the right bank, 48 miles south of Szegedin. Pop. about 18,870. It has fisheries and flour mills, and carries on an extensive trade in grain. NEW BECSE is on the left bank, five miles east of Old Becse. Pop. about 7,750. It carries on a trade in fruit and an extensive trade in grain.

**BECSKEREK, Great and Little,** a city and a town in Hungary. The former is in the administrative district of Torontál, of which it is the administrative centre. It is situated on the Bega, 45 miles southwest of Temesvár, the two places being connected by canal. It is the centre of an important grain and cattle region and a silk worm industry. An old castle is an

object of some interest. Pop. (1900) 26,407, about equally divided between Germans, Serbs and Magyars. Little Becskerek, nine miles northwest of Temesvár, is in the administrative district of Temes. Pop. (1900) 3,738.

**BED**, in modern domestic use, a framework (bedstead) supporting a mattress or cushion, with coverings, on which to take repose or to sleep. Originally a bed consisted merely of a hollowed-out place in the earth. Then, in the colder climates, the skins of animals were employed, not only to render the spot more comfortable, but as covering for the sake of warmth. In the warmer climates dried leaves or rushes or grass was employed for the same purpose, and at the present day there are tribes of savages whose beds still consist of such primitive arrangements.

**Among the Ancients.**— With the development of civilization among the ancient peoples came the desire for greater physical comfort, and the bed was naturally one of the first articles of household furniture to be improved upon. The Egyptians were probably the first to discover that greater comfort could be obtained in a warm climate by a free circulation of the air under the bed. The paintings and inscriptions on the monuments indicate that long before the beginning of recorded history the Egyptians slept on elevated frames, or bedsteads, resting on ornamental legs, which were reached by short steps, the mattress, consisting of dried rushes sewn into cloth coverings, resting on an elastic and open wickerwork of palm fibres. And as among peoples in warm climates to-day, the pillow was not soft, but hard, of wood. The prevalence of insects and snakes probably was another reason for the elevation of the bed from the ground.

Later, among the Babylonians and the Assyrians, there was a further development of the bed, corresponding to the increase of luxury among the nobility, for the common people still continued to sleep on bundles of rushes or grass, as they have done through all the ages. Here the framework was made of gold and ivory and fine woods and was richly carved and ornamented. Gradually it became a habit to recline on the bed for rest during the day, so that it developed into the divan, where the monarch or noble would sit when listening to matters of state. To this day the throne room of the Turkish Sultan is also known as the Divan. Such references to the bed as may be found in the Bible indicate the importance of the bed in those days, as "I have decked my bed with coverings of tapestry, with carved works, with fine work of Egypt" (Prov. vii, 16).

**Among the Greeks and Romans.**— The ancient Greeks had an elegant kind of beds in the form of open couches, the mattresses being stuffed with feathers or wool. These they used during the day too, much as chairs are used at the present time, and even reclined on them while eating. The luxury of the Orient did not develop in Greece to the same extent, for the Asiatics commonly said of the Greeks that they did not know how to sleep comfortably. When the Persian King, Artaxerxes, presented one of his magnificent beds to the Athenian envoy, Timogoras, he sent also an attendant skilled in preparing it.

The Romans copied their beds largely after the Greeks, though they added to their comfort by the invention of air cushions. After the downfall of the republic they began adding the magnificent trappings and luxuries of the ancient Orientals. There were two kinds of beds: the "lectus tricliniaris," or couch for reclining on at meals; and the "lectus cubicularis," which was for sleeping on at night. It is also said that it was the Romans who introduced the first beds into England, for when they invaded that country they taught the barbarian natives how to make straw or rush mattresses.

**In the Middle Ages.**— In the colder climate of northern Europe the development of the bed adapted itself also to the question of warmth as well as to comfort. Soft feather pillows came into use and the skins of animals gave place to heavy textile materials of wool, though to this day it is not uncommon to find the wealthier classes of northern Russia covering themselves with wolf and bear skins. In Germany large, broad pillows were also used for covering, and are so used to this day. But as modern hygiene has demonstrated that feathers are bad conductors of caloric and do not permit the free radiation of heat from the body, which is essential to health and comfort, feather beds are gradually giving way to modern hair mattresses.

**Modern Beds.**— Modern mattresses are sometimes made of felt, of pure hair, or of alternate layers of hair and cotton, stuffed more or less tightly into a casing of strongly woven material, called ticking. Pillows are made of materials similar to those of the mattresses, and the bed coverings of almost any fabric suited to the taste and purse of the owner, from coarse cotton sheets or blankets to the finest wool or silk. The heavy canopies of the Middle Ages, probably an evolution of the mosquito-netting of the Orient, have also been abolished for hygienic reasons.

The folding bed is a recent development largely peculiar to America, where city apartments have made space a question of special consideration. They are so arranged that the bottom of the bedstead can be swung upward against the tall headrest and the bed becomes either a dressing table or a bookcase. Truckle, or trundle, beds were formerly used for similar economic reasons and consisted of a low platform on wheels to admit of its being run under the larger bed by day and was occupied at night by children or servants. Cots are also widely used for the sake of saving space; they are generally very narrow, have very low head- and foot-rests and during the day may be covered over and used for sitting in the place of chairs. There are also folding cots and lounges, constructed over a box body, wherein the bedding may be concealed during the day, sometimes in a drawer.

Special beds have also been contrived for the use of sick or wounded persons, notably mattresses of material impervious to air or water and filled with either the one or the other.

*In French History* (see BED OF JUSTICE), the bed of justice was the throne on which, before the Revolution of 1789, the king used to sit when he went to Parliament to look after the affairs of state, the officers of Parliament attending him in scarlet robes. As this interference of the king with Parliament was not compatible with free government, "sitting

on the bed of justice» came to signify the exertion of arbitrary power.

*In Law,* a divorce from bed and board is the divorce of husband and wife to the extent of separating them for a time, the wife receiving support, under the name of alimony, during the severance.

*In Mechanics,* a bed is the foundation piece of a portion of anything on which the body of it rests, as the bed-piece of a steam engine; the lower stone of a grinding-mill; or the box, body or receptacle of a vehicle.

**BED AND BEDDING PLANE.** A bedding plane is a plane of parting in a sedimentary rock, parallel to the stratification, and along which the rock tends to part more readily than in any other direction. A bed is a unit lying between two successive bedding planes. Laminæ are very thin beds. A stratum (q.v.) may consist of one or more beds, but must be of the same kind of rock throughout. Beds of strata may pinch or thin out and disappear in all directions. They are then called lenses or lentils, or are said to be lenticular.

**BED CHAMBER, Lords of the,** 12 officers in the household of the British sovereign, who act as his personal attendants. When the sovereign is a Queen, these officers are the «ladies of the bed chamber.» It is considered a high honor among the English nobility to be appointed to this office. The salary paid to each of these officials is £1,000 a year. All are under the command of the groom of the stole, who attends on the royal personage only on state occasions.

**BED OF JUSTICE** (Fr. *lit de justice*), formerly a solemn ceremony in France, in which the king with the princes of the blood royal, the peers, and the officers of the Crown, state and court proceeded to the Parliament, and there, sitting upon the throne (which in the old French language was called *lit,* because it consisted of an under cushion, a cushion for the back and two under the elbows), caused those commands and orders which the Parliament did not approve to be registered in his presence. The Parliament had the right of remonstrating in behalf of the nation against the royal commands and edicts. If the king, however, did not choose to recede from his measures, he first issued a written command (*lettres de jussion*) to the Parliament, and if this was not obeyed he held the *lit de justice.* The Parliament was then, indeed, obliged to submit, but it afterward commonly made a protest against the proceeding. Louis XV held such a *lit de justice* in 1763, in order to introduce certain imposts, but on account of the firm resistance of the parliaments was finally obliged to yield. The last *lits de justice* were held by Louis XVI at Versailles, 6 Aug. 1787.

**BED-SORE,** an ulcer due to long-continued pressure on certain bony prominences of the body, due to protracted maintenance of the reclining position. The buttocks, shoulder-blades and heels are the most frequently affected sites. In certain diseases, notably in myelitis, or inflammation of the spinal cord, bed-sores may develop very rapidly, within 10 days to two weeks. Here the nerve-fibres governing the tone of the skin are affected. In long-continued diseases, however, necessitating the reclining posture, bed-sores develop largely from lack of careful nursing. A due amount of attention paid to absolute cleanliness, care for the skin, careful turning, and use of air-cushions or the water-bed, are often effective in preventing them. Alcohol and water, equal parts, is one of the best washes. If ulcers develop in spite of all precautions, they should be surgically treated. Oxide of zinc ointment, balsam of Peru, aristol powder, or bismuth powder, may all be used, alone or in combination.

**BEDAMAR,** bā-dą-mar′, a character (a Spaniard of noble birth) in Saint Real's 'Conjuration des Espagnols contre la République de Venise,' the source of Otway's 'Venice Preserved.'

**BEDARD, Pierre Stanislas,** French-Canadian publicist: b. at Charlesbourg, near Quebec, 1763; d. 1829. He was educated at the Seminary of Quebec, returned in 1792 to the first legislature of lower Canada, became leader of the opposition, and was the first to demand responsible government. One of the founders of *Le Canadien,* established in 1806 as the organ of French-Canadian nationalism, he was, on the seizure of that paper, in 1810, imprisoned and refused a trial. Subsequently he became a judge.

**BEDARIEUX,** bā-dā-rē-ü, France, town in the department of Herault on the left bank of the Orb, 18 miles north from Beziers. It is well built and has manufactures of fine and common cloth, woolen stuffs, floss silk, worsted and cotton stockings, hats, soap, olive-oil; tanneries, dye works, paper and glass works and a brass foundry. It has also a trade in wine and brandy. Pop. 6,186.

**BEDBUG,** a hemipterous insect (*Cimex* or *Acanthias lectularius*). The body is broad, two and a half lines in length, flat and wingless; it is a rust red color with fine brown hairs. By its shape it is adapted for living in cracks between boards in furniture, etc., and by its long, slender beak it sucks the blood of its victim. This insect lays eggs throughout the warmer months of the year, the generations succeeding each other as long as the temperature is high enough. The eggs are oval, white and the young bugs hatch in about eight days, escaping by pushing off a lid at one end of the shell. They are white, transparent, differing from the perfect insect in having a broad, triangular head, and short and thick antennæ. A species closely related to the bedbug lives as a parasite on domestic birds, such as the dove. A nest of swallows swarming with alleged bedbugs was once found on a courthouse in Iowa. Trestwood states that the bedbug is 11 weeks in attaining its full size; it molts about five times. De Geer has kept full-sized individuals in a sealed bottle for more than a year without food. The cockroach is the natural enemy of the bedbug and destroys large numbers, as does also the Reduvius and certain kinds of ants. In Europe a small black ant, *Monomorium,* is said to clear a house of them in a few days. Houses have been cleaned of them after being thoroughly fumigated with brimstone, or by the use of insect powder blown into the cracks and crevices where they live. They are also easily destroyed by painting the cracks with corrosive sublimate dissolved in alcohol.

Temporary relief may be had by sprinkling insect powder over the sheets of the bed one is to occupy. As the bedbug was known to Aristotle, who supposed it arose spontaneously from sweat, it is probable that it originated about the Mediterranean Sea, for it was not known to have occurred in England before the 17th century. Consult Osborn, 'Insects Affecting Domestic Animals' (Department of Agriculture Bulletin); Sutherland, H., 'The Book of Bugs.'

**BEDDARD, Frank Evers,** English zoologist: b. Dudley, 19 June 1858. He graduated from New College, Oxford. In 1882 he joined the *Challenger* Expedition Commission on its two-year cruise as naturalist and was assistant editor in the preparation of the reports. He next became examiner in zoology and comparative anatomy at the University of London and lectured on biology at Guy's Hospital. In 1884 he was appointed prosecutor of the London Zoological Society. He is the author of 'Animal Coloration' (1892); 'Monograph on the Oligochæta' (1895); 'A Textbook of Zoogeography' (1895); 'Structure and Classification of Birds' (1898); 'Book of Whales' (1900); 'Mammalia' (1902); 'Earthworms and Their Allies' (1912).

**BEDDED VEIN.** See BLANKET VEIN.

**BEDDOES,** bĕd-ōz, **Thomas,** English physician and author: b. Shiffnal, Shropshire, 13 April 1760; d. 24 Dec. 1808. He distinguished himself both at school and at Oxford by his knowledge of ancient and modern languages and literature. The great discoveries in physics, chemistry and physiology irresistibly attracted him. He continued his studies with success in London and Edinburgh. In his 26th year he took his doctor's degree, afterward visited Paris, and formed an acquaintance with Lavoisier. On his return he was appointed professor of chemistry at Oxford. There he published some excellent chemical treatises and observations on the calculus, scurvy, consumption, catarrh and fever. Dazzled by the splendid promises of the French Revolution, he offended some of his former admirers, and excited such a clamor against him by the publication of his political opinions that he resigned his professorship. He then composed his 'Observations on the Nature of Demonstrative Evidence,' in which he endeavored to prove that mathematical reasoning proceeds on the evidence of the senses, and that geometry is founded on experiment. He also published the 'History of Isaac Jenkins,' which was intended to impress useful moral lessons on the laboring classes in an attractive manner. After his marriage in 1794 he formed the plan of a pneumatic institution for curing diseases, particularly consumption, by means of factitious airs or gases. With the assistance of the celebrated Josiah Wedgewood, he succeeded in opening this institution in 1798. As superintendent of the whole, he engaged young Humphry Davy, the foundation of whose future fame was laid here. The chief purpose of the institution, however, was never realized, and Beddoes' zeal gradually relaxed, so that he relinquished it a year before his death. In the last years of his life he acquired considerable reputation by his 'Hygeia,' in three volumes.

**BEDDOES, Thomas Lovell,** English dramatist and physiologist: b. Clifton, 20 July 1803; d. Basel, 26 Jan. 1849. He published 'The Bride's Tragedy' while an undergraduate at Oxford, and led an eccentric life, ultimately committing suicide. His work was largely fragmentary, but his posthumous 'Death's Jest-Book; or, the Fool's Tragedy' (1850) received the high praise of such judges as Landor and Browning. It was begun in 1825, and occupied him till his death, being mostly written while he was studying medicine in Germany. In 1890 Mr. Gosse edited an edition of his poetical works in two volumes, with a memoir. See DEATH'S JEST-BOOK.

**BEDE, BEDA, or BÆDA,** known as "The Venerable Bede," English historian and scholar, was born in 673 in the territory of the double monastery of Wearmouth and Jarrow, in the county of Durham, and died in the monastery at Jarrow in 735. At the age of seven he was entrusted to Benedict Biscop, abbot of Wearmouth and one of the best equipped scholars of the age, who, together with Ceolfrith, abbot of Jarrow, directed his education. All the rest of Bede's life was spent in the monastery of Wearmouth and Jarrow, which was administered as one foundation though the buildings were some miles apart. In his 19th year he was made deacon, and in his 30th year, priest. He never held positions of higher dignity, refusing the office of abbot because its duties would have interfered with his chosen work of "learning, teaching and writing." Under Bede, Northumbria became one of the great centres of learning in Europe. He himself gave instruction in Latin, Greek, Hebrew, astronomy, mathematics, grammar, rhetoric and music; in short, in all the subjects which constituted the learning of the Middle Ages. His knowledge was encyclopedic in character, and all, directed toward the service of the Church, is recorded as having been imparted with a vivacity and charm that endeared him greatly to his pupils. Besides attending to his monastic duties and his work as teacher, Bede wrote voluminously. In a brief summary of the main events of his life at the conclusion of his 'Historia Ecclesiastica,' finished in 731, he gives a list of his works amounting to nearly 40 titles. His activities did not cease, however, with the completion of his great history, and at the very hour of his death, as is narrated by his pupil, Saint Cuthbert, he was engaged in dictating a translation of the Gospel of Saint John, now unfortunately lost. Cuthbert states that Bede was a lover of Anglo-Saxon poetry, but the only extant writings in the vernacular which can be connected with his name are two lines of a poem known as Bede's 'Death Song,' quoted by Cuthbert. The body of his writings consists of exegetical treatises on the books of the Old and New Testaments, and of treatises on scientific, rhetorical and historical subjects, all written in Latin. His reputation as a mathematician was very great, and for five centuries following his death his works were standard throughout Europe. For modern readers, however, Bede's most interesting and important achievements lie in the field of history. His greatest work is his 'Ecclesiastical History' (*Historia Ecclesiastica Gentis Anglorum*), a history of England from the earliest Roman

occupations to the year 731. It is written in a charmingly simple and pure style, and is remarkable for a degree of critical judgment such as one would not expect in a monk of the 8th century who had never lived outside his monastery. It was translated into West Saxon by or under the direction of Alfred the Great, and it was largely used for the earlier entries of the 'Anglo-Saxon Chronicle.' It is still the main source of our information concerning England for the period which it covers.

**Bibliography.**— For Bede's works, consult Migne, 'Patrologiæ Cursus Completus' (Vol. 90); Giles, 'Opera Omnia' (London 1843). The separate edition of the 'Historical Works,' by Plummer (Oxford 1896), contains much valuable material, among other things the letter of Cuthbert narrating Bede's death. The West Saxon translation of the 'Historia' is printed in Wülker, 'Bibliothek der Angelsächsischen Prosa' (Vol. IV, 1899). For estimates of the character and work of Bede, consult Bright, 'Chapters of Early English Church History' (3d ed., 1897); Brooke, 'English Literature from the Beginning to the Norman Conquest' (1898); Hunt, 'The English Church from its Foundation to the Norman Conquest' (1899); the Introduction to Plummer's edition of his 'Ecclesiastical History.'

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**BEDE, Adam.** See ADAM BEDE.

**BEDEAU,** bĕ-dō, **Marie Alphonse,** French general: b. Vertou, near Nantes, 1804; d. Nantes 1863. He won his military fame in Algeria, where he was active in the operations against the Algerians and became general of brigade. In 1847 he was for a short time governor of Algeria. He was in Paris at the outbreak of the revolution of 1848, and was subsequently vice-president of the Constituent Assembly and was made vice-president of it, always voting with the Republican party. As he opposed Louis Napoleon, he went into exile after the *coup d'état* of December 1851.

**BEDEGUAR,** bĕd'ę-gär, or **SWEET-BRIAR SPONGE,** a mossy roundish gall somewhat resembling a chestnut burr in size and form, but generally more or less reddish or purplish. It is caused by a poisonous fluid injected into the plant by a gall-fly (*Rhodites rosæ*), the larvæ of which may be found feeding upon the plant juices. Like many other vegetable substances, it was believed to be useful in medicine in cases of sleeplessness, diarrhœa, scurvy, stone, worms, etc.

**BEDEL,** bĕ-dĕl', **Timothy,** American army officer: b. Salem, N. H., about 1740; d. 1787. In the Revolutionary War he was in command of the American force near Montreal, which surrendered without resistance when attacked by Brant's Indians. He was sick at the time, and the surrender was made by the officer second in command, yet Arnold placed the blame on Bedel.

**BEDELL,** bĕ-dĕl', **Frederick,** American physicist: b. Brooklyn, N. Y., 12 April 1868. He was graduated at Yale in 1890, and at Cornell (Ph.D.) in 1892, was assistant professor of physics at the last named, 1892–1904, and professor of applied electricity since that time; he is editor of *The Physical Review.* He has established a high reputation for his investigations in alternating currents of electricity. Publications: 'Principles of the Transformer' (1896); with A. C. Crehore, 'Alternating Currents' (4th ed., 1901); 'Direct and Alternating Current Manual' (1909); and numerous special articles on physics and electricity. He contributed the electrical definitions in 'Webster's Dictionary' and the definitions of electrical units in the 'Standard Dictionary.'

**BEDELL, Gregory Thurston,** American clergyman: b. Hudson, N. Y., 27 Aug. 1817; d. 11 March 1892. In early life he was rector of the Protestant Episcopal Church of the Ascension, New York. In 1859 he was consecrated assistant bishop of Ohio, and in 1873 bishop of that State. He wrote 'The Divinity of Christ'; 'The Profit of Godliness'; 'The Age of Indifference'; 'Episcopacy — Fact and Law'; 'A Canterbury Pilgrimage'; 'A Votive Pillar'; 'Memorial of Bishop McIlvaine'; and 'Pastoral Theology.'

**BEDELL, William,** English clergyman: b. Black Notley, Essex, 1570; d. 1642. He studied at Cambridge, became minister of Saint Edmundsbury in Suffolk, and in 1604 went to Venice as chaplain to the Ambassador, Sir Henry Wotton. Here he remained for eight years and became intimately acquainted with the celebrated Fra Paolo Sarpi, who taught him Italian and was taught theology in return. While here Bedell translated the English prayer-book into Italian. On his return to England he resumed the duties of his curacy, but left it in 1615 for the living of Horingsheath. Here he remained for 12 years, and quitted it to become provost of Trinity College, Dublin. He undertook several important reforms, and successfully accomplished them through the admirable manner in which he tempered firmness with prudence. In 1629 he was appointed to the united sees of Kilmore and Ardagh, but thinking the duties of one sufficient, he retained only Kilmore and insisted on resigning Ardagh. He next turned his attention to the Roman Catholics, and labored assiduously to convert them to Protestantism. He caused the prayer-book to be translated into Irish and read regularly every Sunday in the cathedral. The New Testament had already been translated, but Bedell had the honor of perfecting the boon by procuring the translation of the Old Testament. In 1641, on the breaking out of the rebellion, his house was for some time the only English one in the county of Cavan which remained uninjured; but at last he was so far involved in the common fate that he was carried off to the castle of Cloughboughter, where he was imprisoned with many others, the only exception in his favor being that he was not put in irons. His works are few and of comparatively little importance. His biography was written by Bishop Burnet.

**BEDEN,** the Arabic name, in Palestine, of the local species of ibex (*Capra sinaitica*), which ranges throughout Palestine and along both shores of the Red Sea. It varies little from other ibexes except in having the great horns of the bucks more compressed, and the knobs on their front at less regular intervals. The general color is yellowish, with conspicu-

ous dark markings on the front of the forelegs, chest and back. See IBEX.

**BEDESMAN** (Saxon, *bead*, a prayer), was a common suffix to the signature at the end of English letters in the 15th and 16th centuries, and equivalent to petitioner. The Pasten letters, 1460–80, furnished many examples. Sir Thomas More, writing to Cardinal Wolsey, styles himself "Your humble orator and most bounden bedesman." Margaret Bryan, the governess of Princess Elizabeth, signs herself, in writing to a superior, "Your dayly bedewoman."

**BEDFORD, Gunning,** American patriot: b. Philadelphia, Pa., about 1730; d. September 1797. He was a lieutenant in the French war; entered the Revolutionary army with the rank of major; was wounded at White Plains; became muster-master-general in 1776; was a delegate to the Continental Congress; and was elected governor of Delaware in 1796.

**BEDFORD, Gunning,** American lawyer: b. Philadelphia, Pa., 1747; d. 30 March 1812. He was graduated at Princeton in 1771; became a lawyer; acted for a time as aide-de-camp to General Washington; represented Delaware in the Continental Congress in 1783–86, and became attorney-general of the State and United States judge for the district of Delaware.

**BEDFORD, Gunning S.,** American physician: b. Baltimore 1806; d. New York, 5 Sept. 1870. His uncle, Gunning Bedford, was one of the framers of the Constitution, first attorney-general of Delaware, aide-de-camp to Washington, and United States judge for the district of Delaware. The nephew was graduated in 1825 at Mount Saint Mary's College, Emmetsburg, Md. He took his degree in medicine at Rutgers in 1829. The next three years were devoted to study abroad. In 1833 he became professor of obstetrics in Charleston Medical College. He went from there to Albany, N. Y., at the New College foundation. In 1836 he went to New York, and in 1840 founded the University Medical College. In connection with this institution he founded the first free obstetrical clinic in America. His 'Clinical Lectures on the Diseases of Women and Children' (1855), and 'Principles and Practice of Obstetrics' (4th ed., 1868) were much used as textbooks.

**BEDFORD, John Plantagenet** (DUKE OF), regent of France, third son of Henry IV of England: b. 20 June 1389; d. 1435. Shakespeare, who calls him Prince John of Lancaster, introduces him in his plays of Henry IV as distinguishing himself by his youthful courage in the battle of Shrewsbury in 1403, and forming a kind of moral contrast to his more dissipated brother, the Prince of Wales. During the reign of Henry V he participated in the fame acquired by the conquest of France; but his talents were fully displayed when, after the death of that King, he became regent of France, having been appointed to this post by Henry in his will. At Verneuil, in 1424, he displayed his military talents; and the difficulties which he experienced in endeavoring to maintain possession of the conquered provinces in France afforded frequent occasion for the manifestation of his ability. The greatest blemish in his character is his cruel execution of the Maid of Orleans in 1431. He survived this event about four years, and dying at Rouen, was buried in the cathedral of that city.

**BEDFORD, John Russell** (DUKE OF), English nobleman: b. 1766; d. 1839. He was versed in literature, fond of science, and a passionate lover of agriculture, to the improvement of which he devoted years of his life and the expenditure of vast sums of money. He was the father of the celebrated statesman, Lord John Russell (q.v.)

**BEDFORD, Randolph,** Australian author and journalist: b. Sydney 28 July 1868. He led a wandering life, which included working as a supercargo on a river steamer, prospector, reporter, journalistic free lance and mining engineer. In the latter capacity he wandered over most of the countries bordering on the Mediterranean Sea (1901–05). He is a constant contributor to magazines, reviews and newspapers on a wide variety of subjects. Among his published works are 'True Eyes'; 'The Whirlwind' (1903); 'Snare of Strength' (1905).

**BEDFORD,** England, a parliamentary and municipal borough, situated on the Ouse, county town of Bedfordshire, 50 miles northwest of London. The chief buildings are the law courts, a range of public schools, a large infirmary, county jail, etc., and several churches. The town is rich in charities and educational institutions. The most prominent of these is the Bedford Charity, embracing grammar and other schools, and richly endowed by Sir William Harpur, a native of the borough, who was lord mayor of London in 1561, and left to the institution lands, now of great value, in the heart of London. There is an extensive manufactory of agricultural implements, engineering works and breweries. It was one of the earliest centres of the lace trade, originally introduced by Huguenot refugees. The first mention of Bedford in history is in the 'Anglo-Saxon Chronicle,' in which, as Bedican-fortha, it was the scene of a battle between British and Saxons in 571. It was burnt by the Danes in 1010. John Bunyan was born at Elstow, a nearby village, and it was at Bedford that he lived and preached, the 'Pilgrim's Progress' being written during his long incarceration in Bedford jail. John Howard, the philanthropist, founded the Congregational Church which bears his name, and resided in the vicinity. Pop. (1911) 39,183.

**BEDFORD,** Ind., city and county-seat of Lawrence County, 65 miles southwest of Indianapolis on the Baltimore & O. S. W., the Chicago, Ind. & L., the Bedford & W., the Monon., and the Terre Haute & S. E. railroads. It has 21 large quarries of building-stone, the working of which is the chief industry, but there are also railroad shops and roundhouses, saw-mills and a foundry and machine shop. There are three banks and one trust company, with resources amounting to $350,000; four schools and six churches. The post-office, public library, Elks' home, city hall and courthouse are fine stone edifices. Taxable property is valued at $5,000,000. Pop. (1910) 8,716; (1916) 12,000.

**BEDFORD,** Nova Scotia, a village of Halifax County, situated at the mouth of the Sack-

ville River, on the Intercolonial Railroad, north of and close by the city of Halifax. Its site is very picturesque, and it is a favorite summer resort.

**BEDFORD**, Pa., borough and county-seat of Bedford County, situated on a branch of the Juniata River, and on the Pennsylvania and the Huntington & B. T. M. railroads, 94 miles southwest of Harrisburg. It is a place of considerable historic interest, as it was for some time an important military post, was once Washington's headquarters, and in 1794 the headquarters of the troops sent to suppress the Whisky Rebellion. Of interest also are the old courthouse and soldiers' monument. Bedford Springs, a favorite summer resort, is located about a mile from Bedford. The chief industry is the mining and manufacture of iron. There are also flour mills, planing mills and a large peanut factory. Bedford's first charter, granted in 1795, is still in operation, and provides for a mayor, elected every four years, and a borough council. The municipality owns and operates the waterworks. Pop. (1910) 2,235; (1914) est. 2,500. Consult 'History of Bedford and Somerset Counties' (New York 1906).

**BEDFORD**, Quebec, capital of Missisquoi County, situated near the northern end of Lake Champlain, 60 miles from Montreal, on the Canadian P. Railroad. Its chief manufactures are knitting-needles, stoves and farming implements. Pop. 1,432.

**BEDFORD CITY**, Va., town and county-seat of Bedford County, 10 miles from Peaks of Otter, on the Norfolk & W. Railroad, midway between Lynchburg and Roanoke. It has a picturesque situation at the base of the Blue Ridge Mountains, with an elevation of over 1,000 feet. It is the seat of the Randolph Macon Academy for Boys (Methodist Episcopal), of the Belmont Seminary (Presbyterian), of the Saint John's Institute for Girls (Episcopal) and of the Jeter Female Institute (Baptist), and has a high school and public schools. Among the public buildings are the courthouse, new post-office and new National Elks Home. There are three banks. It is in a tobacco-growing region, is the centre of the trade for its district and has tobacco and cigar factories and warehouses, as well as several other industries, including a woolen-mill, flouring-mills, planing-mill, tin can factory and asbestos plant. The value of taxable property is $1,423,120. The government is by common council. Receipts for 1915 were $55,187; disbursements, $55,337. The waterworks and hydro-electric power and light plant are owned by the municipality. Pop. 2,508.

**BEDFORD LEVEL**, England, a tract of land, comprising about 400,000 acres in Cambridge, Norfolk, Suffolk, Huntingdon, Northampton and Lincoln counties, formerly full of fens and marshes and in rainy seasons for the most part under water. It derives its name from Francis, Earl of Bedford, who in the 17th century expended large sums of money in attempting to drain the district. Numerous cuts have been made, intersecting every part, some so large and deep as to serve as navigable canals. In the Isle of Ely two of these cuts, the Old and New Bedford rivers, running nearly parallel to each other, are navigable for over 20 miles. A great part of the level is under cultivation, and produces grain and some other crops in considerable quantities; but there is still enough fen to form shelter for vast numbers of wild fowl.

**BEDFORD MISSAL**, a book made for John Plantagenet, Duke of Bedford (q.v.) and his duchess. This rich volume is 11 inches long, 7½ broad and 2½ thick, bound in crimson velvet, with gold clasps, on which are engraved the arms of Harley, Cavendish and Hollis, quarterly. It is embellished with 59 large miniature paintings, with over 1,000 of a small size; and among them are to be seen several portraits of persons of eminence. It was purchased by Edward Harley, Earl of Oxford, from Lady Worsley, great-granddaughter to W. Seymour, 2d Duke of Somerset, who figured in the reign of Charles I; and descended from Lord Oxford to his daughter, the Duchess of Portland. In the year 1786, when the collection of the Duchess was brought to sale, it was purchased by Mr. Edwards for $1,100, and was sold again at the sale of the collection of that gentleman, in the year 1815, when it brought $3,350, and came into the possession of the Duke of Marlborough. On coming to the hammer once more it strongly attracted the attention of book-collectors and antiquaries, and realized the unprecedented sum of $5,350, being sold at that price (June 1833) to Sir John Tobin of Liverpool. It is now lodged in the collection of the British Museum. In a historical point of view it is interesting on account of its pictorial embellishments, some of which have been engraved by Virtue for his portraits to illustrate the 'History of England.' For the antiquarian and the student of the fine arts it is one of the most interesting monuments of that age. The antiquarian Gough published a work describing the Bedford Missal. Dibdin, in his 'Bibliomania,' gives an account of it.

**BEDFORDSHIRE**, England, a south-midland county, surrounded by Huntingdon, Cambridgeshire, Herts, Buckinghamshire and Nottinghamshire. It is the fourth smallest English county, with an area of 466 square miles. It lies principally in the basin of the river Ouse, which flows through the famous Vale of Bedford, rich in cornlands. It is mainly flat, varied by a spur of the Chilterns in the south, and by a range of chalk in the northwest. It is the most distinctively agricultural county in England, over 88 per cent of the area being given over to this industry. The lace industry goes back to the time of Catherine of Arragon, and it received marked stimulus from immigrations of Flemings in the 16th century following the persecutions of the Duke of Alva in the Low Countries, and from Huguenots who fled from France on the revocation of the edict of Nantes. Other industries are the making of straw plait for hats, sedge-mat making and the manufacture of agricultural implements. The county also produces phosphate of lime, fuller's earth, stone and silver sand. The principal proprietor is the Duke of Bedford, whose seat, Woburn Abbey, dates from the beginning of the 18th century. The county is rich in antiquities, which include the Augustinian priory at Dunstable, the church of Elstow near Bedford and the pre-Norman churches of Clapham and Levington. The county returns two mem-

bers to Parliament, for the Biggleswade and Luton divisions respectively. Pop. (1911) 144,588.

**BEDIVERE,** bĕd'ĭ-vĕr, SIR, in Arthurian legend, one of King Arthur's most trusted knights. It was Sir Bedivere who cast the sword Excalibur into the lake and carried the dying Arthur to the vessel in which he was borne away to Avalon.

**BEDLAM,** a corruption of Bethlehem, the name of a religious foundation granted in 1547 by Henry VIII to the corporation of London, and by them applied to the purpose of a hospital for the insane. The place was originally within the city boundaries, but in 1814 a new building was erected in Saint George's fields, on the south side of the Thames, which was called New Bethlehem, or vulgarly, Bedlam. The patients, who had been discharged partially cured, and went about begging, were called Bedlam beggars, or Tom-o'-Bedlams. 'What a Bedlam' has become a colloquialism to describe any noisy meeting.

**BEDLINGTON,** England, an urban district of Northumberland, on the river Blyth, five miles southeast of Morpeth. It is an important coal-mining centre, and has iron works and chain and nail-making. It has an important ecclesiastical building in the church of Saint Cuthbert, of Norman architecture, which was one of the traditional resting-places of the body of the saint in its miraculous pilgrimage from Durham to Lindisfarne. Pop. (1911) 25,440.

**BEDLINGTON TERRIERS.** See TERRIERS.

**BEDLOE'S, or LIBERTY, ISLAND,** an island in New York harbor; ceded to the United States government in 1800; the site of Fort Wood, erected in 1841 and mounted with 77 guns. It is now the location of Bartholdi's colossal statue of 'Liberty Enlightening the World,' presented by France to the United States. See LIBERTY, STATUE OF.

**BEDMAR, Alfonso de la Cueva** (MARQUIS DE), Spanish politician and cardinal: b. 1572; d. Oviedo 1655. He was sent in 1607 by Philip III as Ambassador to Venice, and rendered himself famous by the conspiracy against Venice which St. Real has so well described. Notwithstanding the circumstantiality with which the details are given by St. Real, the very existence of the conspiracy is still considered by many a very difficult historical problem. The probability is that the conspiracy was real, but that the Senate, satisfied with having discovered it, and not willing to break altogether with Spain, did not think it advisable to give it much publicity. It forms the subject of Otway's tragedy, 'Venice Preserved.' Bedmar was obliged to save himself by flight to avoid the fury of the populace, but he did not lose the favor either of his own sovereign or of the Pope. By the former he was appointed governor of the Low Countries, where his severity and rigor made him universally detested; and from the latter he received a cardinal's hat.

**BEDNUR,** bĕd-noor', or **BEDNORE,** India, decayed city, now a village, of Mysore, in the midst of a basin in a rugged tableland of the western Ghats, at an elevation of more than 4,000 feet above the sea, 150 miles northwest of Seringapatam. It was at one time the seat of government of a rajah, and its population exceeded 100,000. In 1763 it was taken by Hyder Ali, who pillaged it of property to the estimated value of $60,000,000, and subsequently established an arsenal here, calling it Hydernager (Hyder's town). It was taken by the British under General Matthews in 1783, but soon retaken by Tippoo, at the head of a superior force, when General Matthews and all the principal British officers were put to death. Pop. 1,000.

**BEDOTT, Widow,** the literary name of Mrs. Francis Miriam Whitcher, author of the once famous 'Widow Bedott Papers.'

**BEDOUIN,** bĕd'oo-ēn or bĕd'oo-ĭn (Arab, *bedâwi*), the name given to the nomadic Arabs, as distinguished from those settled in towns and villages and engaged in agriculture and manufactures. The Bedouin inhabit the deserts of Arabia and northern Africa, and are lean and short, but very active and capable of enduring great fatigue. They live mainly by hunting and pastoral occupations, and very little agriculture is carried on. Their food consists mostly of the produce of their herds, and they enjoy excellent health. Their temperament is cheerful, and they are honorable in their dealings with one another or with guests. Many of them, however, partly support themselves by robbery, but the statements regarding their marauding propensities seem to have been exaggerated. They live in tents, but frequently when traveling they sleep in the open air. Their religion is professedly Mohammedan, but is of a very simple character. The women grind corn and weave coarse cloths, and many of the tribes barter horses, camels, cattle, etc., for various necessaries such as arms and cloth. Some tribes gain part of their subsistence by escorting travelers, pilgrims, etc., across the deserts. They are monogamous, but divorce is easily obtained and frequent. Though generally very ignorant, they are by no means unintelligent; and they possess the lively fancy of most Eastern nations. The head of a tribe is the *sheik,* and they have also judges known as *cadis.* See Burckhardt, 'Notes on Bedouins and Wahabys' (1830); Blunt, 'Bedouin Tribes of the Euphrates' (1879).

**BEDREDDIN HASSAN,** bĕd-rĕd-dĕn' hăs-săn, the hero of the amusing cream tart story in the 'Arabian Nights Entertainments.'

**BEDSTRAW, Galium,** a genus of about 200 annual or perennial herbs with four-angled stems, natives mostly of the colder climates, whether of latitude or altitude, in the northern hemisphere. The species, which are mostly harsh-feeling weeds, are often attractive for their regular whorls of leaves and their panicles of profuse minute, white, yellow, green or purple blossoms, which in some species are used by florists to add "misty delicacy and airy grace" to bouquets, especially of sweet peas, and to cover rock-work in and out-of-doors. The two species most cultivated for this purpose are *G. mollugo* (European) sometimes called baby's breath (see GYPSOPHILA), and *G. boreale* (American). Yellow bedstraw or cheese rennet (*G. vernum*), a species with yellow flowers, is used for curdling milk. Its flower sprays yield a yellow dye when boiled in alum solutions and its roots a red one, said to rival mad-

der as a wool dye. For this use attempts at cultivation have been made in England. This species, together with *G. trifidum* and *G. boreale*, redden the bones and milk of animals that eat them in quantity. Goose grass or cleavers (*G. Aparine*), a troublesome weed common to Europe, Asia and America, yields a seed sometimes used as a substitute for coffee. It is noted for the hooked prickles of its stems, fruits and leaves. In China *B. tuberosum* is cultivated for its farinaceous tubers. Some species, for instance, *G. mollugo* and *G. rigidum*, have been tried in cases of epilepsy and others in cutaneous disorders.

**BEE, Bernard E.**, American Confederate general: b. South Carolina 1824; d. 21 July 1861. Graduating from West Point in 1845, he served in the Mexican War, after which he was assigned to frontier duty in Minnesota and Dakota. On the outbreak of the Civil War he joined the Confederacy and was killed while leading his brigade at the battle of Bull Run.

**BEE, Hamilton Prioleau**, American Confederate general: b. Charleston, S. C., 1822; d. 1897. In 1839 he acted as representative of Texas on the commission which defined the boundary line between Texas and the United States, from the Red River to the mouth of the Sabine. In March 1843 he was sent by President Houston of Texas to negotiate with the Comanche Indians, which was finally successful. Later he became secretary of the Senate of Texas, but on the outbreak of the Mexican War he joined General McCulloch's command. On the rupture of hostilities between the Confederate States and the United States, he was made a brigadier-general of the provisional army of Texas, joining the Confederate army the year following.

**BEE**, any hymenopterous insect belonging to the Apoidea group, the "genus Apis" of Linnæus. It was formerly, until quite recently, regarded as the single family of Apidæ, or by some naturalists as two families, the Apidæ and the Andrenidæ. The name now is applied to all those Hymenoptera whose tongues are capable of sipping the nectar from flowers, whose head and thorax are covered with a feathery hair and whose hind legs or feet are dilated. They again are subdivided into some 1,500 variations, ranging from the honey bee of highly developed intelligence to the lesser parasitic bee. In the complexity of their social life and the subdivision of their community functions the honey bees show even a higher order of intelligence than the ants, standing at the head of the whole insect world in this regard. Their habitat comprises the whole world, though they are most numerous in the warm and temperate climates.

**Varieties.**—According to the researches of a group of modern naturalists, at the head of which was W. H. Ashmead of the United States National Museum, bees are now classified as a superfamily of Apoidæ, of the heterophagous Hymenoptera, and are divided into 14 subdivisions, ranking as families. Of these the chief are the true bees (*Apidæ*) and the bumblebees (*Bombidæ*) which alone live in highly organized communities. The rest are of non-social habits, each one nesting by itself. These families are the hairy digger bees; the cuckoo bees, which invade the hives of the social bees; the small and the large carpenter bees; the mason bees; the leaf cutter bees; the potter bees; the parasitic bees; the burrowing bees and others, including the *Prosopidæ*, the simplest and the lowest variety, considered the primitive type from which all the other varieties have evolved. Of the solitary varieties the *Anthophoridæ*, or hairy digger bees, are the highest forms. They build their nests in the grounds, at the bottom of horizontal burrows with lateral chambers. In all these forms the individuals are divided sharply into the two sexes, male and female, in which they differ markedly from the social bees.

**The Social Bees.**— The honeybees and the bumblebees, constituting the varieties which have developed a highly complex communal life, are described by L. O. Howard in the following words: "Each species is composed of three classes of individuals — males, females and neuters. They have the power of secreting wax, from which their cells are made and the larvæ are fed from time to time by the workers. The outer side of the dilated tibiæ is smooth and in the workers is hollowed into a shining plate for carrying pollen, which is collected by means of the pollen brushes on the basal joint of the hind tarsi. As a general thing the body is covered with hair." Of the two families constituting the social bees the bumblebees are the lower, who build their hives underground. Unlike the bumblebees, the honeybees form permanent colonies, storing food for consumption during the winter. The population of one community may sometimes number many thousands. In a wild state they usually build their hives in hollow trees or even in open view among the branches. When their propensity to store food, in the form of honey, was first taken advantage of by man is not known, for there are records of bee-keeping among the early Egyptians and certainly it was an active industry among the Greeks.

**The Keeping of Bees.**— During the long period in which the honeybees have been semi-domesticated, or adapted to the needs of men, several varieties of them have been developed. It is not uncommon for an artificial hive to hold a bee population of 50,000 individuals. These communities are divided into three classes: the drones, or male bees, comparatively few in number; a single individual, a fully developed female, who performs the functions of a communal mother, laying an unlimited number of eggs after only one act of fertilization, commonly called the "queen"; and third, forming the great bulk of the hive's population, the workers, who perform all the labors necessary to the maintenance of the community. Though also known as "neuters," they are in fact females whose generative organs are atrophied, though occasionally some of them will lay eggs.

**The Queen Bee.**— A few days after she has emerged from her cell, and if the weather is fine, the queen bee makes her first and only exit from the hive, except when the period of swarming arrives. She stands for a few moments at the entrance of the hive, then, with a buzz, flies rapidly upward, followed by the drones, or males. High up in the air the sexual union between the queen and the swiftest and strongest of the male bees takes place. Hardly

has the act been consummated when the father of the coming generation falls back dead in mid-air and drops to the earth, his mission fulfilled. Having been fertilized, the queen returns to the hive and shortly begins the laying of her eggs, sometimes as many as 3,000 or even 4,000 a day. Meanwhile, the other males are quickly killed off by the workers. On her return to the hive the queen is immediately surrounded by from 12 to 15 of the workers who act as her personal attendants, feeding, cleaning and otherwise attending to all her wants, that she may devote all her energies to the important functions of motherhood.

**The Eggs.**— The queen now begins depositing her eggs in the waxen walled cells of the comb, of a bluish color and about one-twelfth of an inch in length. Some authorities contend that she can, at will, lay eggs which will hatch out workers or drones, while others are of the opinion that this depends on the kind of food fed by the workers. At any rate, the cells for the eggs of queen bees, workers and drones differ, but never does the mother bee make a mistake in the kind of egg that each cell demands. In about three days the eggs hatch out and the worm-like larvæ appear. For five days they are carefully fed by the attending workers. At the end of that period they have grown so large as to completely fill their cells, whereupon they refuse further nourishment and the workers immediately seal them up in their cells. The little larva then spins itself into a silken covering or cocoon and transforms itself into a pupa. Thirteen days later the pupa breaks forth from its cell and emerges a perfect bee. Immediately it is waited upon by the attending workers and for several days, until it makes its first flight, it is fed by its nurses. Meanwhile its cell is thoroughly cleaned out and the queen, making her rounds, deposits another egg in it. The cell in which the coming queen is developing is larger than the others and oval in shape. On nearing maturity the mother makes repeated attempts to break it open, to destroy her coming rival, but the attending workers of her retinue crowd around her and thus protect the royal infant.

**Swarming.**— As the population of the hive increases the queen bee becomes restless, and this growing agitation extends itself to the workers throughout the hive. Then, one fine day, the queen rushes forth, as she has done only once before, the centre of the swarming buzzing colony, which throngs out after her. Not far off, on some hanging bough of a tree, she settles and all the swarm settle on her or on each other, hanging in a long, thick bunch. It is then that the experienced apiarist introduces the swarming bees into their new hive, where they establish themselves anew. Meanwhile the young left in the old hive continue the routine of the communal life in their turn. Before many weeks there is a swarming from the newer generation; often there may be three or four swarms in one season from the one hive.

**Wintering.**— When cold weather begins, the life of the bee community begins to subside, the steady hum which can be heard throughout the summer from within dies down and the individuals become sluggish and dull. When the first frosts come they find the bees in a state of semi-hibernation, though not so deep but what they can readily be awakened. A slight jar to the hive, and the low murmur rises and a thermometer placed at the entrance would indicate a steady rise in temperature. During these winter months the life of the hive is in a state of suspension, though occasionally the queen has been known to lay eggs in this period. For other varieties of bees see BEE-KEEPING; BUMBLEBEE; CARPENTER BEE; HONEYBEES; LEAF-CUTTING BEE; MASON BEE; STINGLESS BEE; also INSECT.

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**BEE-BIRDS**, birds that devour bees, especially the honeybee. Not many birds have this habit, the bees being protected against most birds by their stings. A few fly-catching birds, however, have learned how to avoid being stung, and catch not only bees but wasps, take them to a perch and beat them, so as to kill them, and probably get rid of the sting before swallowing them. Notable among these are the European and African bee-eaters (q.v.). The American kingbirds (q.v.) also catch bees, but not as frequently as is popularly supposed, and are known in the Southern States as "bee-martins."

**BEE-EATER**, a small, richly plumaged and graceful bird of southern Europe and northern Africa, whose food consists almost wholly of bees and wasps, and which haunts the neighborhood of the hives of honeybees and devours these useful insects in great numbers. The bee-eaters are related to the kingfishers, and like them dig deep nesting-holes in earthen banks, and lay pure white eggs.

**BEE-KEEPING.**—Few persons who see the little boxes of honey in the market realize the importance and extent of the bee-keeping industry of this country. Careful estimates, based on United States statistics, and the output of large factories for the manufacture of bee-hives and honey-boxes, show that at least 125,000,000 pounds of honey is annually produced, making an aggregate of 5,000 carloads, or a train 35 miles long. The aggregate value of this, at a conservative figure, is $10,000,000. When it is remembered that California alone, in a good year, can produce 500 carloads of honey, and that a good many of the other States produce from 50 to 100 carloads, one can form some idea of the commercial possibilities wrapped up in so small an insect as the bee.

Bee on the wing.

The honey resources of the great West are very largely dependent on alfalfa and mountain

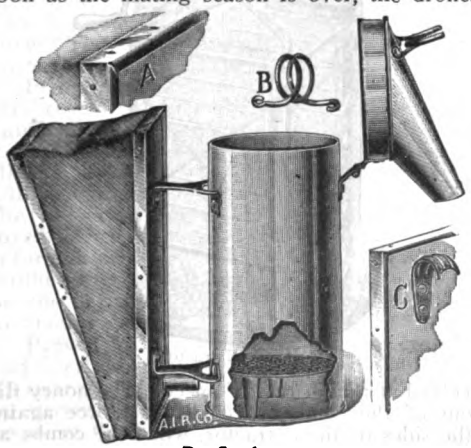
sage. In the North-Central and Eastern States, clover and basswood, in the South-Central, tupelo, palmetto, catclaw, mesquite and guajilla.

Bee on Red Clover.

There are several races of bees — *Apis dorsata,* or the giant bee of India and the Philippines; *A. Indica,* of India; *A. florea,* and *A. mellifica.* From a commercial standpoint, the last mentioned is by all odds the most important. It comprises the black or German bees of this country; the Italians, from the southern part of Italy; the Syrians, of Palestine; the Cyprians, from the island of Cyprus; the Carniolans, from Austria, and the Tunisians, from north Africa. But the most important of all these varieties is the Italian. They are the most industrious and the gentlest. They, together with the black or German bees and their crosses, incorrectly termed "hybrids," are used most extensively in the United States — in fact, throughout almost all the civilized world.

**Three Kinds of Hive Bees.**— There are three kinds of bees in the hive; namely, the workers, or undeveloped females; the queen, a fully developed female; and the drone, or the male bee. The queen lays all the eggs of the hive, and may lay as many as 3,000 a day. Notwithstanding there may be from 10,000 to 100,000 bees in a single colony, the queen will be the mother of the whole colony. The drones are incapable of gathering honey, and serve only one purpose — that of fertilizing or fecundating the young queens, which act takes place in the air. The workers gather all the honey and pollen, fill all the combs and rear the young or baby bees. As soon as the mating season is over, the drones are shoved out of the hives and allowed to starve.

Queen Bee.



Bee-Smoker.

**How to Handle Bees.**— There is a general impression to the effect that the ordinary honeybees are vicious, even in a towering rage, ready to attack any one who comes near their hives. This is a great mistake. Under certain conditions, when their habits are known, they can be handled almost like kittens; will permit one to tear their hives apart, rob them of their months and months of hard earnings — the honey and the wax — without even offering to sting. But an inexperienced or awkward person may infuriate them to fearful vengeance. To bring them into a state of subjection it is only necessary to blow smoke into the entrance and over the combs, when, if the motions about the hive are careful and deliberate, they will offer no attack. Smoke, when intelligently used, disarms opposition, puts the bees in a quiet state and enables their owner to do with them, within reasonable limits, whatsoever he will.

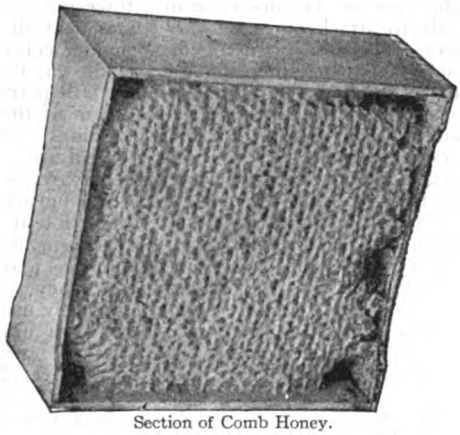
The bee-smoker is simply a small bellows attached to a sort of tin cup having a suitable snout from which the smoke is blown by the action of the bellows, forcing air through the cup in which there is a slow-burning fuel. Besides the bee-smoker, the bee-keeper generally uses a bee-veil made of mosquito netting, Brussels net or any suitable material, the same fastened to the rim of the hat and tucked inside of the coat-collar or under the suspenders. Gloves are sometimes used by very timid persons or beginners, but as a general thing all work with the bees is performed with the bare hand. Stings are, of course, occasionally received, but beyond a sharp, momentary pain no permanent effect will be felt after the first season, for the system of the bee-keeper very soon becomes inoculated so that no swelling takes place. There are many who receive from 10 to 20 stings a day without any ill effects; but if one will work carefully he will receive almost no stings.

Bee-Veil.

**Marketable Products of the Hive.**— These are beeswax, comb and extracted honey, propolis or bee-glue (sometimes used for making shoe polishes) and "apis mellifica," a homeopathic preparation taken from the poison sacs at the root of the stings of bees.

**Production of Wax.**— Beeswax, which is secreted by the bees and used by them for building their combs, is an important commercial product and commands a good price in the United States. There are frequently combs to be melted up, and it pays to take care of even scraps of comb and the cappings taken off in extracting. A common method of taking out the wax is to melt the combs in a solar wax-extractor. Various wax-presses are on the market, but if much wax is produced, it is advisable that the bee-keeper make a careful study of the methods of wax extraction,

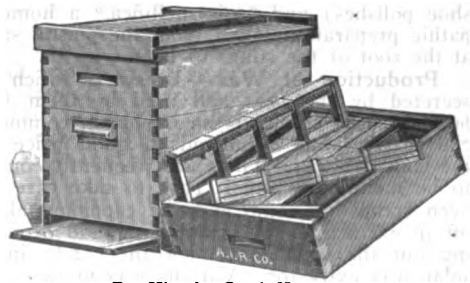
as there is usually much wax wasted even after pressing.



Section of Comb Honey.

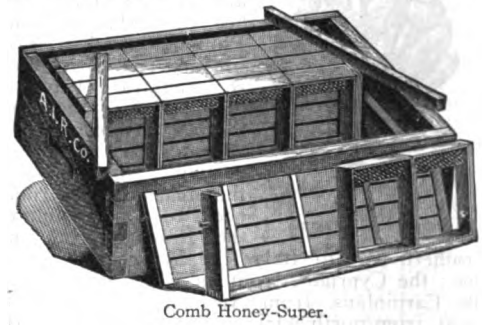
**Comb Honey Production.**— Comb honey is usually put up in little square or oblong boxes, of which something like 50,000,000 are made and used in the United States annually. The honey in these boxes retails all the way from 12 to 20 cents. Extracted honey is in the liquid form, thrown from the combs by means of centrifugal force in a honey-extractor, hence the name. There are bee-keepers who make a specialty of producing honey in the comb and others the same product free from the comb. The first mentioned cannot be adulterated or manufactured, newspaper reports to the contrary. One bee-keeper of considerable standing and prominence has had a standing offer of $1,000 for a single sample of artificial comb honey so perfect as to deceive the ordinary consumer. Notwithstanding that this offer has been broadly published over the United States for over 20 years, no one has ever claimed it.

It may be well to explain that a partial basis for these canards lies in the fact that bee-keepers use a commercial product known as "comb foundation," which is nothing more or less than sheeted wax, about an eighth of an inch thick, embossed on both sides with indentations having the exact shape and form of the bottom of the cells of honey-comb — hence the name. It is put into the hive, where the bees draw it out into comb. This is as far as the skill of man can go; hence there is no such thing as artificial comb, much less artificial comb honey.



Bee Hive for Comb Honey.

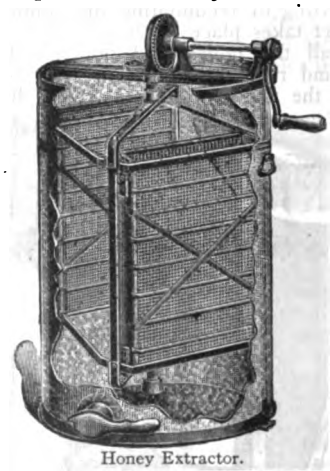
The business of producing comb honey requires some knowledge of the trade. Hives and supers require to be specially constructed and so arranged that the little boxes containing strips of comb foundation shall be accessible to the bees where they can construct the foundation into comb, fill the cells with honey and seal them over. When their owner finds that his little servants are busily at work in the



Comb Honey-Super.

fields; that the combs are beginning to whiten and to be bulged with honey in what is called the brood-nest, he puts on his honey-boxes in the part of the hive he calls the "super." These are allowed to remain on during the height of the honey-flow until they are filled and capped over, when they are removed and others put in their place.

The business of producing extracted (or liquid) honey requires the same intelligent care and attention. Instead of section-boxes, however, an extra set of combs, or "brood-frames," as they are called, is put in the upper story, the same being placed above the lower or brood part of the hive. When these are filled with honey and capped over, they are removed from the hive by first shaking the bees off, taken to the extracting-house and extracted. The thin film of wax covering the comb is shaved off with a thin-bladed knife specially designed for the purpose. After the combs are uncapped, they are put in the honey-extractor and re-



Honey Extractor.

volved at a high rate of speed. The honey flies out of the comb by centrifugal force against the sides of the extractor, when the combs are reversed, exposing the other surfaces, which are emptied in a like manner. They are next returned to the hive to be filled by the bees,

when the process may be repeated as long as the season lasts.

Uncapping Can.

**Swarming.**— At the beginning of or during what is called the honey-flow, when the colony has reached a high state of prosperity and the combs are being filled with honey, a swarm is liable to come forth between the hours of 9 and 3 o'clock. Three-fourths of the bees, including the queen, are pretty sure to come out with a rush, filling the air with thousands and thousands of them. The bees hover about in the air for 15 or 20 minutes, when they will in all probability cluster on some bush or tree. They will wait here for two or three hours, or perhaps as many days, at the end of which time they will take wing again and go direct into some hollow tree or cave where they will take up new quarters and start housekeeping anew. The young bees, with one or more young queens, are left to take care of the old hive.

In ordinary practice it is a custom for the bee-keeper to rehive the swarm by taking the bunch of bees, as soon as it clusters, and putting it into another hive. Or he can, if he chooses, clip the old queen's wings, preventing her flight with the swarm; and when the bees come forth she will crawl out of the entrance to be captured by her owner, and as soon as her subjects return, which they will do to find their royal mother, they are allowed to go into a new hive on the old stand, while the old hive is carried to another location in the bee-yard.

**Prevention of Swarming.**— Since crowded and overheated hives are particularly conducive to swarming, this tendency is largely overcome by giving plenty of ventilation and additional room in the hive. Shade is also a good preventive. Frequent examinations of the hive during the swarming season for the purpose of cutting out queen cells is a help, and requeening with young queens early in the season generally prevents swarming. A better method, according to some, is to remove brood about swarming time and thus reduce the amount of bees in the hive. There are generally colonies in the apiary to which frames of brood can be given to advantage. Various non-swarming devices have been invented, including a non-swarming hive so constructed that there is no opportunity for the bees to form a dense cluster.

**Robbing.**— There are certain times during the season when no nectar is secreted by the flowers. It is during such periods as this that the bees will rob each other if they can or help themselves at candy-stands or to the housewife's fruit-preserves during the canning season. When sweets can be obtained in considerable quantity, either from a weak colony unable to defend itself or from man, the bees are apt to become furious and their craze is not unlike that of gold-hunters when gold is discovered in large quantities. There is a rush; and when the sweets are suddenly cut off, the bees are inclined to be cross and to sting. The wise and careful bee-keeper will see to it that the entrances of his weak colonies are properly contracted so that the sentinels or guards can protect themselves from intrusion from other bees.

**Feeding.**— The bee-keeper may, perhaps, take all the honey away from his bees, or nearly so, as his honey will bring two or three times as much as any cheap syrup costs him. Sometimes he finds it profitable to take the honey all away and give them syrup made of granulated sugar. The purpose of this, of course, is to keep them from starving during the time no honey is coming in from natural sources or during the winter.

**Transferring.**— In increasing the apiary it is sometimes best to buy colonies in box hives on account of their smaller cost, and to transfer them to hives with movable frames. This should be done as soon as possible, for box-hive colonies are of small value as producers. The best time to transfer is in the spring, when the amount of honey and the population of the colony are at a minimum. Transferring need not be delayed until spring merely because that season is best for the work. It may be done at any time during the active season, but, whenever possible, during a honey-flow, to prevent robbing.

**Uniting.**— After the honey-flow, and just before winter comes on, there are liable to be many weak colonies. It is a common practice to put two or more of these together so as to make one strong stock. The combs from two or three different hives are put into one hive and the bees are confined for several days with wire cloth over the entrance, when they are allowed to fly. Some of them will return to their old stands but the majority of them will remain.

**Wintering.**— Two methods are in vogue in the colder portions of the United States. One is to put the colonies in double-walled hives, packed under chaff cushions, and contracting the entrances down to shut out as much cold as possible. The other is to put the summer hives into a dry, dark cellar as soon as cold weather comes on, leaving them there till spring.

**Diseases of Bees.**— Bees are subject to diseases, like all domestic animals, such as dysentery, paralysis and foul and black brood. Dysentery, as its name signifies, is a sort of bowel trouble due to the retention of the feces for an extended time during winter. If the bees are shut up without a chance for flight (for they never void their feces inside of the hive except when confined), their intestines become distended and this finally results in purging. The only remedy is warm weather and a flight. Paralysis is a form of palsy that seems to affect the adult bees. Their bodies become swollen and shiny, the affected individuals crawling out of the entrance and running into the grass to die. The remedy is to sprinkle powdered sulphur over the combs. Foul brood and black brood are germ-diseases that affect bees in the larval or imago state. The little maggots become brown or black and die, the dead matter finally assuming a sodden, gelatinous or ropy condition. When it attacks a colony, shake the bees into a clean hive and put them on frames of foundation. For three or four days feed them sugar syrup. The old combs, including the frames, must be burned. If the hive has been soiled by the tainted honey or dead matter, it must be scalded out or held over flames for a few seconds. Any honey taken from the hive may be rendered safe to give to the bees by boiling it for two hours.

A number of insects, birds and mammals must be classed as enemies of bees, but of these the larger wax moth, the lesser wax moth and ants are the only ones of importance. Moth larvæ often destroy combs. To prevent this the combs are fumigated with sulphur fumes or bisulphide of carbon in tiers of hives or in tight rooms. In warm climates ants are a serious pest. The usual method of keeping them out is to put the hive on a stand, the legs of which rest in vessels containing water or creosote. Another method is to wrap a tape soaked in corrosive sublimate around the bottom board.

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E. R. Root,
*Author of 'A B C of Bee Culture' and Editor of 'Gleanings in Bee Culture.'*

**BEE-KILLER**, one of the robber-flies (q.v.), of the dipterous family *Asilidæ*, some of which are known to seize with their sharp lancet-shaped beak bumblebees and honeybees and suck their blood. This species *Trupanea apivora*, the bee-killer, captures the honeybee while on the wing, and one such fly has been known to kill 141 bees in a single day. These flies are stout-bodied, hairy or bristly, with a long abdomen; the mouth-parts are much developed and adapted for piercing. The maggots live in the soil, preying on the grubs of beetles, or on the roots of plants.

**BEE-LARKSPUR.** A well-known flowering plant, *Delphinium grandiflorum*.

**BEE-LINE.** The shortest route to any place, that which a bee is assumed to take; though, in fact, it often does differently in its flight through the air.

**BEE-LOUSE** (*Braula coeca*), is a parasite on the honeybee, occurring on the thorax especially of the queen bee — rarely on the drones. Benton states that he has at one time removed as many as 75 from a queen, though the numbers do not generally exceed a dozen. It is the sole member of a family (*Braulidæ*) of flies closely allied to the horse flies (*Hippoboscidæ*) and the bat-ticks (q.v.). The bee-louse is about one-twentieth of an inch in length, entirely without wings, and somewhat spider-like in appearance. On the day the maggot or larva hatches from the egg it sheds its skin and turns to an oval puparium of a dark-brown color. It has frequently been imported to this country on queens with attendant bees but has gained no foothold.

**BEE MOTH**, or **WAX MOTH**, a moth belonging to the family *Galleridæ;* specifically, *Galleria mellonella*, the larva of which feeds on wax in hives. The worm is yellowish-white with brownish dots. It constructs silken galleries running through the comb of the bee-hive on which it feeds. When about to transform it spins a thick white cocoon. Two broods of the moth appear, one in the spring, the other in August, and the caterpillars mature in about three weeks. It may become a most troublesome pest in the apiary.

**BEE-ORCHIS**, the name of a species of orchis, the *Ophrys apifera*. It is so called because a part of the flower resembles a bee. It is large, with the sepals purplish or greenish-white, and the lip brown variegated with yellow.

**BEE-TREE**, a forest tree inhabited by honey-making bees, which have taken possession of some natural hollow and filled it with combs. Such a tree may be found by accident, or by deliberate hunting. Those in search take to the edge of the woods a box of diluted honey, and when they see bees near them, open the bait to which one by one the bees will be attracted. The direction of their flight is then carefully observed; the bait is moved to another point, and new observations taken, and the converging lines followed until they intersect at the tree. As most of these bee-tree colonies are escaped swarms the capture of the bees themselves is more important than merely to get such honey as may be there. The best plan is therefore to climb to the nest, if possible, and gather the combs and contents to be let down in a pail or basket, or else saw out the whole section of the tree containing the nest and lower it to the ground. Full directions for this complicated proceeding are given by Root, 'A B C of Bee Culture' (1903).

**BEEBE, Charles William**, American ornithologist: b. Brooklyn, N. Y., 29 July 1877. Graduating from Columbia University, he was, in 1899, appointed ornithological curator for the New York Zoological Society. As such he founded the collection of living birds at the New York Zoological Gardens, making it one of the best in the world. Later he was at the head of various scientific expeditions to Nova

Scotia, Florida, Mexico, South America, India and China. In his search for data for a monograph of pheasants he made a trip costing the Zoological Society over $100,000. He is the author of 'Notes on the Psychology of Birds' (1903); 'Two Bird Lovers in Mexico' (1905); 'The Bird' (1906); 'The Log of the Sun' (1906); 'Geographic Variations in Birds with Reference to Humidity' (1907); 'Ecology of the Adult Hoatzin' (1909); 'An Ornithological Reconnaissance of Northeastern Venezuela' (1909); 'Our Search for a Wilderness' (1910); 'Racket Formation in the Tail Feathers of the Motmot' (1910); 'Monograph of the Pheasants' (1916).

**BEECH,** a small genus (*Fagus*) of handsome forest trees of the family *Fagaceæ*. The American beech (*Fagus grandifolia*), and the European or common beech (*F. sylvatica*), are closely similar. They often attain heights exceeding 80 feet, and diameters greater than three and one-half feet. The former has smooth, light-gray bark, a broad round head, and leaves which turn yellow before they fall in the autumn; the latter has dark-gray bark, and has shining leaves which persist during most of the winter. The tree scarcely bears fruit before the 50th year of its age, and then not every year. After the 140th year, the wood-rings become thinner. The tree lives for about 250 years. Some stems are fluted, some even twisted. The roots stretch far away, near to the surface of the soil, partly above it. Young beeches are useful for live hedges, as they bear pruning, and as their branches coalesce by being tied together, or by rubbing each other. Amputations of limbs, and deep incisions in the tree, soon become obliterated by the bark. The dead leaves are often used by the poor of Europe for stuffing beds and pillows. Both species yield pleasant, edible, three-angled nuts, usually in pairs in prickly involucres. These nuts are eaten by swine, deer and poultry, and in France, and to some extent elsewhere, are pressed to extract a mild culinary long-keeping oil. Both species thrive in light, limy loams, upon which formations they often become the leading species of tree, covering large tracts. They do not grow in damp situations. Their reddish-brown, solid, hard but brittle wood makes excellent fuel, and is largely used for making tool handles where bending and twisting are not expected. The wood is not durable in contact with soil, but since it is remarkably lasting when immersed in water, it is largely used in dams, water-mills, sluices, etc. The wood of the European species is preferred to that of all other species, except walnut, for making shoes (*sabots*), in France, since it is remarkably resistant to the entrance of water. The bark is sometimes used in tanning. Both species are used in ornamental planting on account of their symmetrical forms, the colors of their bark and foliage, which latter is remarkably free from the attacks of disease and insects. The European species has produced a large number of varieties, of which the copper or purple beech is probably the best known in America. *F. sieboldii*, a native of eastern Asia, is sometimes planted for ornament. *F. betuloides*, a Terra del Fuegian species, is a striking feature of the winter landscape on account of its evergreen foliage. Its wood is used for flooring vessels, and is exported to the Falkland Islands and elsewhere for roofing. Blue or water beech, better known as American hornbeam (*Carpinus americana*), is a common tree in damp woods and along streams. It is not a member of this genus. See HORNBEAM.

From the wood of the beech an especially pure form of creosote is obtained that is largely employed in the treatment of chronic lung disorders. See CREOSOTE.

**BEECHER, Catherine Esther,** American educator and philanthropist, eldest daughter of Lyman Beecher: b. East Hampton, L. I., 6 Sept. 1800; d. Elmira, N. Y., 12 May 1878. Her faith and life were nearly wrecked at 22 by the loss of her betrothed, Prof. A. M. Fisher of Yale, in a shipwreck, and she lived unmarried, plunging into work as a relief; but she had the Beecher energy which could hardly have remained quiet in any case. From 1822 to 1832 she managed a girls' school in Hartford, Conn., with remarkable success and repute; she wrote some of her own classbooks, one on mental and moral philosophy being afterward used in colleges. From 1832 to 1834 she kept a similar school in Cincinnati, in order to be with her father, who was at the head of Lane Seminary; but her health compelled her to abandon it. For the rest of her life she worked with heart and soul to advance the education of women and girls, physical and social, as well as intellectual and moral, for she believed in the full harmony of all inborn human qualities. She organized a "National Board of Popular Education," to train women teachers, especially for the South and West, and traveled and wrote extensively in this behalf. As with most persons of much force, she had many "fads" and eccentricities; but she was a high-minded, accomplished and charming woman, of great wit and executive capacity. Her first work was on the 'Difficulties of Religion' (1836); among others were 'True Remedy for the Wrongs of Women' (1851); 'Physiology and Calisthenics' (1856); 'Common Sense Applied to Religion' (1857); 'Woman's Profession as Mother and Educator, with Views in Opposition to Woman Suffrage' (1871).

**BEECHER, Charles,** American clergyman, son of Lyman Beecher: b. Litchfield, Conn., 7 Oct. 1815; d. Haverhill, Mass., 21 April 1900. He was educated successively at the Boston Latin School, the Lawrence Academy at Groton, Mass., and at Bowdoin College, graduating 1834. He then studied theology under his father at Lane Seminary, Ohio, and in 1844 was ordained pastor of a Congregational church at Fort Wayne, Ind. Leaving there in 1851, he was pastor in Newark, N. J., till 1854, and in 1857 took charge of a church in Georgetown, Mass. He lived in Florida, 1870–77, and was State superintendent of public instruction there for two years and was stated supply at Wysox, Pa., in 1885. His best work was in selection of the music for the famous 'Plymouth Collection' of hymns, he having fine musical taste. He wrote 'The Incarnation' (1849); 'David and His Throne' (1855); 'Pen Pictures of the Bible' (1855); 'Redeemer and Redeemed' (1864); 'Spiritual Manifestations' (1879); and 'Eden Tableau' (1880). He also edited his father's autobiography and correspondence (1863).

**BEECHER, Charles Emerson,** American palæontologist: b. Dunkirk, N. Y., 9 Oct. 1856;

d. New Haven, Conn., 14 Feb. 1904. He was graduated at the University of Michigan 1878, studied under Prof. James Hall at Albany, N. Y.; in 1888 was given a position in this department at Yale; in 1892 was made professor of historical geology; and in 1892 succeeded Prof. O. C. Marsh as professor of palæontology and curator of the geological collections. He was author of over 50 papers in scientific periodicals, and the proceedings of scientific societies, chiefly on evolution, especially as illustrated by the growth and structure of trilobites, and on the classification of trilobites and brachiopods; a number of these and similar studies on other organisms were collected as 'Studies in Evolution' (1901), one of the Yale bicentennial publications. He also published a memoir on the *Brachiospongidæ* in the Yale Peabody Museum Memoirs (1889).

**BEECHER, Edward,** American clergyman, son of Lyman Beecher: b. East Hampton, L. I., 27 Aug. 1803; d. Brooklyn, N. Y., 28 July 1895. Graduating at Yale 1822, he studied theology at Andover and New Haven, and in 1826 was ordained over Park Street Church in Boston; which he left in 1830 to take the presidency of Illinois College, Jacksonville, Ill., a theological school, whence many of Dr. Beecher's pupils went to be pastors and teachers in the new West. He returned to Boston in 1844 as pastor of the Salem Street Church; in 1856 went to the Congregational church at Galesburg, Ill., remaining till 1872, also holding for some years a professorship of exegesis at Chicago Theological Seminary. He had been a regular writer for the *Christian Union* since 1870, and in 1872 retired from the ministry, removed to Brooklyn and devoted himself entirely to writing and missionary work, contributing to the *Christian Union,* and editing the *Congregationalist* for six years. Of his books, the two most discussed were 'The Conflict of Ages' (1853), and 'The Concord of Ages' (1860), a transference into terms of Christian theology of the doctrines of pre-existent and continuously existent souls and the dualism of good and evil, the struggle of the two being prolonged into a future life and good finally triumphant. Besides sermons, etc., he also published a 'History of the Alton Riots' (Cincinnati 1837); 'Baptism' (1850); 'Papal Conspiracy Exposed' (1855); 'History of Opinions on the Scriptural Doctrine of Future Retribution' (1878).

**BEECHER, Henry Ward,** American clergyman, son of Lyman Beecher: b. Litchfield, Conn., 24 June 1813; d. Brooklyn, N. Y., 8 March 1887. He was the offspring of a union which has produced some of the world's greatest influences, and in theory ought always to produce them — of a stern, energetic, high-principled father, with a sweet and beauty-loving mother, giving power and continuity to sensibility and sympathetic emotion. Macaulay and Victor Hugo are notable instances in this respect. Beecher had a rather bare, hard childhood, under a father and stepmother who both considered duty and enjoyment hardly compatible. The great genial orator who shouted down and won over hostile mobs was a shy and sensitive boy; the editor, author and booklover had a wretched memory, disliked study and wanted to go to sea. But the religious atmosphere was around him; "converted" in a revival, he decided to train for the ministry, entered the Boston Latin School in 1826, then the Mount Pleasant School at Amherst, graduated from Amherst College in 1834, and began a theological course under his father at Lane Seminary. He revolted at his father's sulphurous theology, however, and for a short time in 1837 was editor of an anti-slavery paper in Cincinnati, fervid love for humanity holding first place with him then as always. Later in the year he took charge of a country church at Lawrenceburg, Ind., and married Eunice White Bullard of West Sutton, Mass., to whom he had been seven years engaged. In 1839 he was called to a church in Indianapolis, then a town of 4,000 people, remaining there eight years and becoming widely known both as a revivalist of great power and as a preacher of delightful humor and originality. In 1847 he was called to Brooklyn to take charge of a new church of nine members, called Plymouth Church. He held this pastorate for 40 years, lacking a few months; and for the most of the time the church was not only a Mecca to the vast class seeking to retain Christianity while forced to discard very much in the way of theology, but the fountain of a stream of influence acting powerfully on the moral and social, and sometimes the political, tendencies of the age. He preached on whatever related to the public welfare, probed every evil and championed every reform, especially of intemperance and slavery. His outspoken courage, strength of thought and felicity of expression, his exhaustive wealth of eloquent rhetoric, humor and pathos, dramatic force and apt analogy and illustration, not only drew to hear him one of the largest permanent congregations in the United States — his immense church with its seating capacity of nearly 3,000 being constantly crowded — but made his pulpit one of the most famed and influential of the English-speaking world; his utterances forming a basis of action for many. He was not a theologian in any sense, and his influence rested on his abstinence from credal logic; he was the spokesman of those who fear that if they compute their doctrinal latitude they may discover much more than they wish to know, and prefer to keep the fruits of faith by evading exact definition rather than lose them by a rigid self-inquiry. To the orthodox of his day he seemed an underminer; though to many at the present he seems conservative enough. He believed in the divinity of Christ, in immortality, in special providences and miracles, in the Bible as a divine revelation by fallible human instruments; he did not believe in eternal punishment (which he publicly denied in 1878), election and reprobation, the fall of Adam, the vicarious atonement, or imputed sin and righteousness; and he declared the orthodox Deity "barbaric, heinous, hideous." He gave his whole soul to the work of preaching, often delivering several discourses in a single day; but such was his physical and mental vigor that he accomplished work in several other directions sufficient in each case for an able and lusty man. He was one of the giants in oratory of the anti-slavery time; and none of the champions of the cause was more hated and reviled than "the abolitionist Beecher," whose work was excelled only by that of his great sister. He left his pulpit in the Frémont campaign to de-

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nounce the Kansas crime, joining the Republican party on its inception and traveling great distances to speak at its meetings. Yet he was not an abolitionist like Phillips and Garrison; and like Lincoln and the mass of the Republicans, held that Congress could not interfere with slavery in the South, but only prevent its extension. The Pro-Slavery party drew no fine distinctions, however, and the Northern Democratic papers all through this period are filled with denunciation and caricature of him. His series of speeches in England in the fall of 1863 helped to turn the tide of English opinion in favor of the North. The prime element of his success was his enormous physical vitality: he tired out the mobs which attempted to howl him down, by actual bodily endurance and power of lungs, before he began the splendid addresses which made them at least enthusiastic admirers of himself, if not perhaps converted believers in the cause he represented. He had the "rapture of the strife" which Attila knew: he loved to be the target of a ring of opponents as well as John Quincy Adams, though without his bitterness, and was as instant and unfailing in retort; a dozen taunts hurled at him in a breath met a dozen crushing but never malicious answers. He was for many years one of the most popular lecturers and after-dinner speakers in America. Of his set orations, those at the Burns centennial of 1859, and by government request at Fort Sumter, in April 1865, on the anniversary of its capture by the Confederates, are most famous. He occupied several editorial positions: editing the *Independent* 1861–63; founding the *Christian Union*, editing it 1870–81; was a fertile sketch writer, and wrote a novel and a 'Life of Christ.' Besides this, he was an enthusiastic amateur farmer, and loved outdoor nature passionately, as well as art and the drama. His open, impressible, sensitive nature responded readily to all things that stimulate the intellect, the heart or the soul. He was essentially a man of impulses and inspirations, trusting to the spontaneous suggestion of the moment, often not even making notes for a sermon, but like all men who make any impress on the world, kept himself filled with material for inspiration to work on, both from books and life. He always lamented that it had not been permitted him to lead a life of scholarship; but in fact he did not lead it because he was not willing to pay the price for it, of abstinence from leadership in the political and social life of the time. He never lacked courage to take a side, right or wrong, and often grieved and alienated large bodies of his friends by doing so when passions were hot. He was a firm adherent of the Seward-Johnson policy of reconstruction in 1866, despite the terrible results to which its prematurity led; sympathized with the Greeley movement in 1872; and braved a threatened disruption of his church in 1884 by voting and speaking for Grover Cleveland. He believed in and advocated free trade and woman suffrage. So brave and impulsive a nature was always shocking the conventions of his order. Naturally, he was forever perpetrating indiscretions in speech, to the delight of his enemies and the discomfiture of his friends. Tact was unfortunately not a large inheritance of most of Lyman Beecher's children, and the paucity of Henry Ward's share was the cause of many an inept and unfortunate public utterance; while his fertility of comparisons and analogies often led him into pithy exaggerations and a humorous extravagance of language which his opponents could easily disprove in the letter.

In 1874 Mr. Beecher's former associate and later successor in the editorship of the *Independent*, Theodore Tilton, charged him with criminal intercourse with Mrs. Tilton. A committee of Plymouth Church examined the case and exonerated Mr. Beecher; but Tilton had brought suit for $100,000 against him, and after a six months' trial the jury disagreed, a week's confinement and 12 ballots showing three for the plaintiff and nine for the defendant. The long public scandal seriously affected Beecher's influence with the outside public, but his own congregation stood loyal to him; and while his 'Life of Christ' was unsalable, and the last two volumes not published till long after his death, his sermons and some of his essays remain popular.

Mr. Beecher's first literary work was done in his Indianapolis pastorate, where he edited an agricultural paper, and wrote for it articles afterward republished as 'Fruits, Flowers, and Farming'; and published his first book, 'Lectures to Young Men' (1844). For 20 years after coming to Brooklyn he contributed regularly to the *Independent*, signing with a (*), whence the two-volume collections of 1855 and 1858 were termed "Star Papers." He was also for some time a regular contributor to the New York *Ledger* of "Thoughts as They Occur," collected in 1864 as "Eyes and Ears"; and wrote serially for it his one novel, 'Norwood' (1867). His sermons were reported in full after 1859, and the collected volumes are termed 'Plymouth Pulpit.' A two-volume selection revised by the author was issued by Lyman Abbott in 1868; other compilations from them are 'Life Thoughts' and 'Notes from Plymouth Pulpit' (1859); 'Pulpit Pungencies' and 'Royal Truths' (1866); 'Morning and Evening Devotional Exercises' (1870); and 'Comforting Truths' (1884). For some years, also, his prayers, of great charm and high quality as compositions, were taken down by stenographers and a collected volume issued in 1867. Other of his works are: 'Freedom and War' (1863); 'Aids to Prayer' (1864); 'Lecture-Room Talks' (1870); 'Yale Lectures on Preaching' (3 vols., 1872–74); 'Evolution and Religion' (1885). Individual sermons and addresses were published also, such as 'The Strike and Its Lessons' (1878); 'Doctrinal Beliefs and Unbeliefs' (1882); 'Wendell Phillips' (1884); 'A Circuit of the Continent' (1884). He also edited the famous 'Plymouth Collection' of hymns (1855); and 'Revival Hymns' (1858). His life was written before his death by Lyman Abbott (1883), and Samuel Scoville (1888); see also 'Autobiographical Reminiscences of Henry Ward Beecher,' by T. J. Ellinwood, who was his private stenographer for 30 years.

Mr. Beecher's wife, EUNICE WHITE BULLARD, was born in West Sutton, Mass., 26 Aug. 1812; d. Stamford, Conn., 8 March 1897. She wrote articles for periodicals, some of them afterward collected; also 'From Dawn to Daylight' (1859), a story of her early married life; 'Motherly Talks with Young Housekeepers' (1875); 'Letters from Florida' (1878); 'All Around the House' (1878); and 'Home'

(1883). Consult Currier, A. H., 'Nine Great Preachers' (Boston and New York 1912); Hillis, N. D., 'Lectures and Orations by H. W. Beecher' (New York 1913) and 'What the Republic Owes to Henry Ward Beecher' (*Homiletic Rev.*, Vol. 65, pp. 437–43, New York 1913).

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**BEECHER, James Chaplin,** American clergyman, son of Lyman Beecher: b. Boston, Mass., 8 Jan. 1828; d. Elmira, N. Y., 25 Aug. 1886. He was graduated at Dartmouth 1848, studied theology at Andover and in 1856 was ordained a Congregational clergyman; thence till 1861 was chaplain of the Seamen's Bethel in Canton and Hongkong, China. Entering the Civil War as chaplain, he rose to the rank of brevet brigadier-general and subsequently held pastorates in Owego, N. Y., 1867–70, Poughkeepsie 1871–73 and Brooklyn 1881–82. After 1884, a sufferer from mental troubles, his last three years were passed in much distress and he finally committed suicide.

**BEECHER, Lyman,** American theologian: b. New Haven, Conn., 12 Oct. 1775; d. Brooklyn, N. Y., 10 Jan. 1863. He was a blacksmith's son and himself a blacksmith's helper and farmer's lad in boyhood. Entering Yale College at 18, he graduated in 1797, studying also theology under President Dwight till 1798, when he became supply at East Hampton, L. I., and was ordained there 1799, remaining till 1810. His remarkable pulpit oratory gained national repute from a sermon in 1804 on Alexander Hamilton's death at Burr's hands — an occasion which made more than one reputation, all utterances being eagerly scanned from the excitement and party feeling. In 1810 he was called to Litchfield, Conn., the seat of a celebrated law school and other educational institutions, at a time when New England was the intellectual autocrat of the country and towns were few and small; and soon became recognized not only as the foremost man in the Congregational body, but one of the greatest of American preachers. About 1814 a half-dozen sermons of his against intemperance, then a common vice among even the clergy, were not only widely read in America and England, but were translated into several foreign languages. He also took a foremost part in organizing Bible and missionary societies, etc.; and his courage, power and energy made many look to him for guidance and succor in trouble. This came in a flood during the next decade, when the Unitarian movement, under Channing and its other great early leaders, was sweeping the Congregational churches around Boston off their feet, and Mr. Beecher, in 1826, at the urgency of influential clergymen, accepted a call to the Hanover Street Church in Boston to stem the tide, which his polemic ardor perhaps aided in doing. In 1832 he accepted the presidency of Lane (Theological) Seminary near Cincinnati, Ohio, which had been endowed on the express condition of his taking charge of it, to strengthen Calvinism in the rapidly-growing West; he remained there till 1852, holding also the chair of sacred theology, and was its titular president till death. He was also pastor of the Second Presbyterian Church in Cincinnati 1832–42. In 1833 the famous philanthropist, Arthur Tappan, the chief founder of Lane, sent the students a report of the proceedings of the Philadelphia abolition convention of that year; the students, partly Southern, at once fell into disputes on the subject of slavery. The trustees vainly tried to check the meetings and discussions; Kentucky slaveholders came over and urged violent suppression of these meetings and threatened the destruction of the seminary. The trustees in terror forbade all further discussion of slavery and therefore all the students deserted in a body. The most of the anti-slavery wing refused to return, and their supporters founded Oberlin College; a few came back, and Mr. Beecher and his son-in-law, Calvin E. Stowe, tried for many years to build up the seminary again but in vain. Shortly after this, in 1835, he was tried as a heretic and hypocrite, first before his own church and then before the Presbyterian synod, for his "moderate Calvinism"; he was acquitted, but the Old School and New School controversy finally split the church in 1838, Mr. Beecher adhering to the New School party. In 1852 he resigned the presidency of Lane and returned to Boston to prepare his works for publication, but was stricken with a slow paralysis of the brain, which enfeebled his mind for many years before his death. Despite the impressions of the extreme orthodox party, he was of the firmest doctrinal faith, though his theology was of his own make, and his humorous audacities of speech often shocked dignified propriety. His boundless energy, boldness, unconquerable will and personal magnetism were those of a natural leader of men; while his unsurpassed logical power, his intense and compact expression and, above all, his entire sincerity and spirituality of purpose, winged with his racy and picturesque wit, set him above every other American clergyman of his time in popular influence. Consult his 'Autobiography and Correspondence,' edited by his son, Charles Beecher (New York 1863); 'Collected Works' (3 vols., Boston 1852); Hayward, E. F., 'Lyman Beecher' (Boston 1904); White, J. C., 'Personal Reminiscences of Lyman Beecher' (New York 1882).

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**BEECHER, Thomas Kinnicutt,** American clergyman, son of Lyman Beecher: b. Litchfield, Conn., 10 Feb. 1824; d. Elmira, N. Y., 14 March 1900. He studied at Illinois College, of which his brother Edward was president, graduating in 1843. He was principal of a Philadelphia grammar-school 1846–48, of the Hartford (Conn.) high school till 1852. He then removed to Williamsburg (Brooklyn), N. Y., and founded a Congregational church, which he left two years later for the pastorate of a church in Elmira, N. Y., where he spent the rest of his life, well known as an unsectarian philanthropist and moral teacher, writer and lecturer, editing for many years a weekly department in Elmira newspapers to discuss current questions, often with rasping originality and always with independence. He was nominated for a variety of offices by nearly every known political party but never elected. He was a chaplain in the Army of the Potomac four months in 1863. In 1870 he published a series of lectures as a book, entitled 'Our Seven Churches' (of Elmira); and in 1901 a

posthumous collection of his juvenile stories was issued, 'In Tune with the Stars.'

**BEECHER, Willis Judson,** American clergyman and author: b. Hampden, Ohio, 29 April 1838; d. 8 May 1912. He was graduated from Hamilton College in 1858 and from Auburn Theological Seminary in 1864, and filled several Presbyterian pastorates. From 1865–69 he was professor of moral sciences and *belles-lettres* in Knox College, Ill.; from 1871–1908 became professor of the Hebrew language and literature in Auburn Seminary; in 1902 was Stone lecturer at the Charleston Theological Seminary; and in 1904 was president of the Society of Biblical Literature and Exegesis. He published 'Farmer Tompkins and His Bible' (1874); 'Drill Lessons in Hebrew' (1883); 'Index of Presbyterian Ministers in the United States 1706–1881' (1883); 'Old Testament Notes' (1897); 'Prophets and the Promise' (1905); 'The Dated Events of the Old Testament' (1907); 'The Teaching of Jesus concerning the Future Life' (1908); 'Reasonable Biblical Criticism' (1911); and hundreds of articles in newspapers, periodicals, cyclopædias and reference books.

**BEECHER FAMILY, The,** an extraordinary American family of religious and humanitarian leaders, mostly of such salient and frequently eccentric originality, combined with immense energy and independence of thought, that the human race was once said to consist of "men, women and Beechers." They were all descendants of Lyman Beecher of New Haven, Conn., himself one of the most notable of them; a famous clergyman, orator and controversialist, who had 13 children, so many of whom rose to national or even international distinction that he was said to be "the father of more brains than any other man in America." Eight of them were boys, seven living to maturity and nearly all of them to extreme old age, all becoming Congregational ministers; and the greatest, Henry Ward, said of them that "only one tried to escape the ministry and he did not succeed." But so great was the intrinsic force of the blood that the daughters were no whit inferior in persistence of energy and originality of ideas; that marriage did not in the least quench their outside work and influence, and that one of them has shown the highest creative genius and left the most enduring memorials of the entire family. The difference in work and sympathies of father and children resulted from difference of generation rather than of spirit. Lyman Beecher's problems were mainly religious. He lived at the threshold of the new material development of the country, when it seemed that the engrossing task was to prevent its relapsing to heathenism; at the beginning of the great liberalizing flood of new scientific knowledge, when there seemed a danger of all Christianity being swept away with the cosmology it rested on; and before the humanitarian questions in this prosperous country had come to the fore. He was nearly 60 when the slavery problem first showed signs of becoming acute; more than 60 when Father Mathew established his first temperance society across the water; and at no period would he ever have favored woman suffrage, which even one of his notable daughters wrote against. But his influence was intensely strong in creating the lofty spirit that fed humanitarianism. It is an encouragement to large families, as so often in history, that the greatest of his children were among the younger ones: Mrs. Stowe was the sixth and Henry Ward Beecher seventh, while the most forceful of the others, Isabella (Mrs. Hooker), was the eleventh. In their order, the ones who grew up were Catherine, William Henry, Edward, Mary, George, Harriet, Henry Ward, Charles, Isabella, Thomas and James. Catherine, robbed of the betrothed of her youth, gave herself to work for her sex, though not with quite the aspirations of most recent women of her type, and perhaps did as much good in training cultivated wives and mothers as if they had remained unmarried teachers. William Henry was a home missionary and clergyman in Ohio and a clergyman in the East. Edward was a clergyman, editor and theological writer, who tried to pour antique Zoroastrianism into modern molds. Mary married in Hartford, Conn., and became the mother of Frederick Beecher Perkins and grandmother of Charlotte Perkins Stetson. George died by accident at 34, while filling a Western pastorate. Harriet, author of 'Uncle Tom's Cabin' and of a mass of other works which would give any other author one of the foremost places in American letters, has a secure immortality from her masterpiece. Henry Ward, creator of the greatness of Plymouth Church, a Moses of liberal Congregationalism, anti-slavery and temperance leader, ardent in all work for humanity and the elevation of the mass, need not be further characterized. Charles, clergyman and admirable musician, is gratefully remembered for his work in compiling the 'Plymouth Collection' of hymn-tunes. Isabella married John Hooker, a Hartford lawyer fully in sympathy with her, and for many years one of the stanchest champions of woman's rights and upholder of all good causes. Thomas, for some 40 years located in Elmira, N. Y., was noted as an able and independent thinker on all public questions, which he discussed with ability and high-mindedness. James C. was clergyman, soldier and clergyman again, till shadows overclouded his mind and brought on a tragic death. Altogether, the family is one of the most useful as well as distinguished of the American intellectual aristocracy.

**BEECHEY, Frederick William,** English admiral, the son of Sir William Beechey, the painter: b. London 1796; d. 29 Nov. 1856. He entered the navy at the age of 10, and in 1811 was present in an engagement off Madagascar, in which three French frigates were captured. In 1818 he accompanied Lieutenant (afterward Sir John) Franklin in an expedition to discover the northwest passage, and the following year took part in a similar enterprise with Captain Parry. In 1821 he was commissioned, with his brother, H. W. Beechey, to examine by land the coasts of north Africa. During the years from 1825 to 1828 he was engaged as commander of the *Blossom* in another Arctic expedition, by way of the Pacific and Bering Strait. Of this he published an account, 'Narrative of a Voyage to the Pacific and Bering Strait' (1831), and subsequently a description of the botany and zoology of the regions vis-

ited. In 1854 he was raised to the rank of rear-admiral.

**BEECHEY, Sir William,** English portrait painter: b. Burford, Oxfordshire, 12 Dec. 1753; d. Hempstead, 28 Jan. 1839. He entered a conveyancer's office, but soon abandoned it and determined to make painting his profession. In 1772 he became a student at the Royal Academy. A large equestrian picture of George III secured his election as a Royal Academician and obtained for him the honor of knighthood in 1798. He was afterward constantly and lucratively employed. He died in 1839 at the advanced age of 86. His portraits "have maintained a respectable second rank"; his attitudes and expression are generally good, but marks of carelessness are apparent in some of his latest pictures. Two portraits by him are contained in the Metropolitan Museum of Art in New York.

**BEECHING, Henry Charles,** English clergyman and author: b. 15 May 1859. He was educated at Balliol College, Oxford; was rector of Yattendon, Berkshire, 1885–1900; professor of theology at King's College, London, from 1900–03; canon of Westminster 1902–11; and was appointed dean of Durham in 1911. He has published editions of Milton, Vaughan, Daniel, Drayton and several anthologies of verse, and is author of 'Seven Sermons to Schoolboys' (1894); 'In a Garden and Other Poems' (1895); 'Pages from a Private Diary' (1898); 'Conferences on Books and Men' (1900); 'Inns of Court Sermons' (1901); Religio Laici' (1902); 'Jane Austen' (1903); 'Two Lectures on Poetry'; 'The Grace of Episcopacy' (1906); 'Lectures on the Atonement' (1907); 'Lectures on the Doctrine of Sacraments' (1908); 'Revision of the Prayer Book' (1910); 'Inspiration' (1914); 'The Library of the Cathedral Church of Norwich' (1915).

**BEEF.** See Meat Packing; Meats and Meat Production.

**BEEF CATTLE.** See Cattle.

**BEEF-EATER.** See Buffalo-bird.

**BEEF-EATERS,** a popular name for the yeomen of the guard of the sovereign of Great Britain, a body instituted at the coronation of Henry VIII in 1485. There are now 100 in service, and 70 supernumeraries. They are dressed after the fashion of the time of Henry VII. The warders of the Tower of London, who wear a similar uniform, are also so called. See Yeomen of the Guard.

**BEEF-TEA,** a preparation made from raw beef and often employed in nursing. It is serviceable for stimulation or for nourishment largely according to the method of its preparation. As usually made, or as prepared from ready-made beef extracts, it has very little food value, but is a strong heart stimulant. When fresh beef is finely chopped and its juice squeezed from it and flavored, to take away the raw taste, the extract obtained is rich in the muscle juices and is highly nutritious. It is often thus prepared for infants and invalids. If, however, the juice thus obtained is mixed with water and the compound is boiled, as is the usual manner, all of the muscle proteids are coagulated, as a scum, and the muscle salts, or extractives, remain in solution. The nutritious portions, the scum, are thrown away and the extractives retained in the tea. In this form the nutritive value is slight, unless the coagulated proteid is retained. Ordinary meat extracts are mixtures of the meat extractives, xanthin, hypoxanthin, creatin, creatinin, etc. These are heart tonics but not nourishing. Their use is contraindicated in irritable hearts, in gout, and in any condition in which it is thought that the patient is not breaking down the normal amount of proteid matter. Broths are made of other meats.

**BEEF-WOOD,** a popular name for the wood of several Australian trees of the genus *Casuarina* (q.v.), which forms the type of a family *Casuarinaceæ*. The trees have been compared to gigantic horse-tails. They have pendant leafless branches, and apetalous monœcious flowers, the male ones being in spikes, and the female in heads. The wood is of a reddish color (whence the name), hard, and close-grained, and used chiefly for fine ornamental work.

**BEEFSTEAK CLUBS,** a term applied to a number of semi-Bohemian clubs that were a feature of London life during the 18th century. They derived their names from the fact that refreshments were limited to beefsteak and liquors. One of the most famous of these institutions was the "Sublime Society of Steaks," founded by John Rich in 1735, manager of Covent Garden Theatre. Hogarth, Wilkes, Garrick, Dodington and other men more or less famous were members of this club. It was even joined at a later period by the Prince of Wales. It remained in existence until 1867. There is at the present time a Beefsteak Club in London, which was founded in 1876. The nearest approach to a similar institution in the United States is the Gridiron Club of Washington, D. C. Consult Arnold's 'Life and Death of the Sublime Society of Steaks' (1871).

**BEEHIVE HOUSES,** the archæological designation given to ancient dwellings of small size and somewhat conical shape, found in Ireland and Scotland. They are formed of long stones without cement, each course overlapping that on which it rests: Sometimes they occur singly, at other times in clusters, and occasionally have more than one apartment. Some of them are found near ancient oratories, and were therefore probably priests' dwellings, and certain groups are encircled by a stone wall for defense. They are assigned to various dates between the 7th and the 12th century.

**BEEKMANTOWN.** See Calciferous.

**BEELZEBUB,** bē-ĕl'zĕ-bŭb (Hebrew, "the god of flies"), a deity of the Moabites or Syrians. This term is applied in the Scriptures to the chief of the evil spirits (Matt. xii, 24; Mark iii, 22, etc.). The correct form is probably Beelzebul, but in the Syriac and Vulgate the final letter is *b*. The alteration in that letter from *b* to *l* may have been due to euphonic reasons, or, as has also been maintained, *zebul* may have signified "dwelling" or "dung." In order to conceive how this name came to be given to one of the greatest of the imaginary spirits of evil it must be remembered what a terrible torment insects often are in the East.

We find that almost all nations who believe in evil spirits represent them as the rulers of disgusting, tormenting or poisonous animals — flies, rats, mice, reptiles, etc. The Greeks worshipped several of their chief deities under the character of protectors against these animals; for instance, Apollo Simintheus, the destroyer of rats. Christ was charged by the Jews with driving out demons by the power of Beelzebub (Matt. xii, 24). Compare 2 Kings i, 2.

**BEER,** bār, **Adolf,** Austrian historian and educational reformer: b. Prossnitz, Moravia, 27 Feb. 1831; d. 1902. His publications include 'History of International Commerce' (1860-64); 'Holland and the Austrian War of Succession' (1871); 'The First Partition of Poland' (1873-74); 'The Austrian Commercial Policy in the Nineteenth Century' (1891).

**BEER, George Louis,** American historical writer: b. Staten Island, N. Y., 26 July 1872. Graduating from Columbia University in 1892, he engaged in the tobacco business, also delivering regular lectures during this period on European history at Columbia, as well as writing on similar subjects. He has written 'Commercial Policy of England Toward the American Colonies' (1893); 'British Colonial Policy, 1754-65' (1907); 'Origins of the British Colonial System, 1578-1660' (1908); 'Old Colonial System, 1660-1754' (1913).

**BEER, Michael,** German dramatist, brother of the composer Meyerbeer: b. Berlin 1800; d. Munich, 22 March 1833. He became known by five tragedies, of which his 'Struensee,' with overture and incidental music by Meyerbeer, is the best. 'The Pariah' (1823), a one-act tragedy praised by Goethe, depicts the status of the Jew in modern Germany. His complete works were published at Leipzig in 1835, and his 'Correspondence' in 1837.

**BEER, Wilhelm,** German astronomer: brother of the preceding: b. 4 Feb. 1797; d. 27 March 1850. He was a Berlin banker and in 1849 became a member of the Prussian Diet. His astronomical labors were associated with those of his friend, the astronomer, Mädler. He built an observatory, chiefly devoted to the observation of the planet Mars and the moon. The crowning labor of the two astronomers was a map of the moon, published in 1836, upon which the French Academy bestowed the Lalande prize. His writings include 'Der Mond nach seinen komischen und individuellen Verhältnissen' (2 vols., 1837); and 'Die Dreikönigsverfassung in ihrer Gefahr für Preussen' (1849).

**BEER.** See Ale and Beer; Brewing and Malting.

**BEERBOHM, Max,** English author and caricaturist, half-brother of Sir Beerbohm Tree (q.v.): b. 24 Aug. 1872. Graduating from Merton College, Oxford, he at once embarked on a literary career. His talents soon found him employment on the Harmsworth papers, though he also contributed freely to other British publications. His cartoons became very popular; there have been five exhibitions of them since 1901. In 1895 he paid a visit of some months' duration to the United States with Beerbohm Tree, his half-brother, the actor. In 1910 he married an American girl, Florence Khan, of Memphis, Tenn. He has written one novel, 'Zuleika Dobson,' a burlesque of student life at Oxford. His other works between book covers are made up of random contributions to magazines and newspapers, essays, satires, etc. They include 'More'; 'Yet Again'; 'The Happy Hypocrite' (1900); 'The Second Childhood of John Bull'; 'A Book of Caricatures'; 'A Christmas Garland.'

**BEERNAERT,** bār'nārt, **Auguste Marie François,** Belgian statesman: b. Ostend, 26 July 1829; d. 1912. He began his political career by being elected a member of the National Chamber of Deputies 1874. Ten years later he became a member of the cabinet as Minister of Agriculture, Industry and Art. Not long afterward he became president of the council and Minister of Finance. In 1895 he was elected president of the Chamber of Deputies. He was on two occasions a prominent member of the International Peace Conference; in 1899 and in 1907. In 1909 he was awarded half of the Nobel prize of that year.

**BEERS, Clifford Whittingham,** American writer on mental diseases: b. New Haven, Conn., 30 March 1876. Graduating from the Sheffield Scientific School in 1897, he suddenly lost his reason from over-study and was for some years an inmate of various insane asylums. He was discharged some years later as cured. In 1908 he published a book which attracted country-wide attention, entitled 'A Mind that Found Itself' (2d ed., 1912), a study of his own mind and experiences during his period of insanity. In 1909 he assisted in the organization of the National Commission for Mental Hygiene, whose purpose is the study of mental disorders and their treatment. Later he helped found the Connecticut Society for Mental Hygiene, of which he was executive secretary. He is also the author of 'The Value of Social Service as an Agency in the Prevention of Nervous and Mental Disorders' and 'A Society for Mental Hygiene as an Agency for Social Service and Education.'

**BEERS, Ethel Lynn,** American poet: b. Goshen, N. Y., 13 Jan. 1827; d. Orange, N. J., 10 Oct. 1879. Her maiden name was Ethelinda Eliot and she was a direct descendant of John Eliot, the apostle to the Indians. Her earlier writings were signed "Ethel Lynn," but after her marriage to William H. Beers she wrote under the name by which she is now known. She is chiefly remembered as the author of the war lyric "All Quiet Along the Potomac," suggested to her by the dispatch from the front so frequently printed in the papers during the early period of the Civil War. It appeared originally in *Harper's Weekly* for 30 Nov. 1861, under the caption "The Picket Guard." Among her other poems are "Weighing the Baby"; "Baby Looking Out for Me"; "Which Shall it Be"? Her collected works, under the title 'All Quiet Along the Potomac and Other Poems' was published on the day of her death.

**BEERS, Henry Augustin,** American author and educator: b. Buffalo, N. Y., 2 July 1847. He graduated from Yale in 1869; was admitted to the New York bar, 1870; became tutor at Yale, 1871-74, assistant professor, 1874-80, and professor of English literature in 1880. He has published, among other works: 'A Century of American Literature' (1878); 'Odds and

Ends,' verse (1878); 'Nathaniel Parker Willis' (1885); 'Prose Writings of N. P. Willis' (1885); 'The Thankless Muse,' verse (1885); 'From Chaucer to Tennyson' (1890); 'Initial Studies in American Letters' (1891); 'Selections from the Prose Writings of Samuel Taylor Coleridge' (1893); 'A Suburban Pastoral and Other Tales' (1894); 'The Ways of Yale' (1895); 'A History of English Romanticism in the Eighteenth Century' (1899); 'A History of English Romanticism in the Nineteenth Century' (1901); 'Points at Issue' (1904); 'Milton's Tercentenary' (1910); 'The Ways of Yale,' enlarged edition (1910), and many uncollected contributions in prose and verse to leading reviews and magazines.

**BEERS**, bē'ėrz, **Nathan**, American soldier: b. Stratford, Conn., 1753; d. New Haven, 10 Feb. 1849. While still quite young he went with his father to New Haven and was a member of a military company formed there in 1774, which was commanded by Benedict Arnold. Immediately on the receipt of the news of the battle of Lexington the company was called together by their captain, and Beers with 39 others volunteered to accompany him to the seat of war. They immediately set out, and, as they passed through Pomfret, were joined by General Putnam. Beers received a lieutenant's commission in the army in 1777, and served until 1783. He afterward engaged in mercantile affairs, and in 1798 was chosen steward of Yale College, a position which he resigned in 1819.

**BEERSHEBA**, bē-ėr-shē'bą (now BIR-ES-SEBA, "the well of the oath"), the place where Abraham made a covenant with Abimelech, King of the Philistines, and planted a tamarisk by the well that he dug. The alliance was renewed by Isaac, who, it would appear, dug a second well (Gen. xxvi, 23, 28, 32, 33). Beersheba is often mentioned as the southern boundary of Palestine, or the land of Israel (Judges xv, 1, etc.), and was given to Judah (Jos. xv, 28) and later to Simeon (Jos. xix, 2). Here Samuel's sons were judges (I Sam. viii, 2). It was in the *negebh*, or "dry" country and Elijah here slept under the desert broom bush (I Kings xix, 3, 5). It was probably an idolatrous centre in the time of Josiah (II Kings xxiii, 8), and condemned as such (Amos v, 5; viii, 14). It was reoccupied by descendants of Judah after the captivity (Neh. xi, 27, 30). The site, now called Bir es Sebâ, is at the foot of the Hebron hills, 50 miles southwest of Jerusalem, in the open pastoral plateau, which is covered with grass in spring, and supports flocks of goats and cattle. There are two wells, with a constant supply of good water even in autumn, cut in rock in the bed of the boundary valley which runs west to Gerar. There is also a third well, now dry. The largest well is over 12 feet in diameter, is lined with masonry to a depth of 28 feet, and has water at 37 feet. The masonry in the 15th course bears an Arabic tablet with a date (505 A.H.) answering to the year 1112 of our era. The second well is five feet in diameter and 40 feet to the water; the stones are cut to the arc of the circle. Ruins of a Byzantine town, or village, including the foundations of a church, exist north of the wells. In Roman days a garrison was stationed here and Beersheba was the seat of a bishopric. The place gradually declined and was totally deserted toward the end of the 13th century. In modern times a new town has sprung up to the southwest of the ruins of the old. Under Ottoman rule it was the seat of a *kaimakam*. It has a mosque, a telegraph station and several shops. The population is about 1,600. The town was taken from the Turks by the British on 1 Nov. 1917. (See WAR, EUROPEAN — TURKISH CAMPAIGN). Consult Baedeker, K., 'Palestine and Syria' (Leipzig 1912).

**BEESLY, Edward Spencer**, English historical writer: b. 1831. He was graduated from Wadham College, Oxford, and was later appointed professor of Latin at Bedford College, London. From 1860 to 1893 he was professor of history at University College, London. He was also editor of the "Positivist Review." In his first work, 'Cataline, Clodius and Tiberius' (1878) he makes an effort to rehabilitate the three men whose names form the title of the book. He was also the author of 'Queen Elizabeth' (1892); 'A Strong Second Chamber' (1907).

**BEESWAX**, a solid fatty substance secreted by bees, and containing in its purified state three chemical principles — myricin, cerin and cerolein. It is not collected from plants, but elaborated from saccharine food in the body of the bee. It is used for the manufacture of candles, for modeling, and in many minor processes.

**BEET, Joseph Agar**, English theologian and author: b. Sheffield, 27 Sept. 1840. Graduating from Wesleyan College, Richmond, he engaged in pastoral work, in which he continued for over 20 years. In 1885 he was appointed theological tutor at Wesleyan College, where he remained until 1905. He was also on the faculty of the University of London, of which he was one of the oldest members. In 1896 he came to the United States and delivered a series of lectures at the University of Chicago, at the summer schools of Chautauqua and at Ocean Grove. In his theological works, two of which have been translated into Japanese and have been used as textbooks in Japan, he attempts to use the methods of science in the discussion of his subjects. His works include 'Credentials of the Gospel' (1889); 'Through Christ to God' (1892); 'The New Life of Christ' (1895); 'The Last Things' (1897-1913); 'A Manual of Theology' (1906); 'Church, Churches and Sacraments' (1907); 'The New Testament: Its Authorship, Date and Worth' (1909); 'The Old Testament: Its Contents, Truth and Worth' (1912); 'A Key to Unlock the Bible' (reissue, 1913); 'A Theologian's Workshop, Tools and Method' (1914).

**BEET, William Ernest**, English Methodist divine: b. Winchcombe, Gloucestershire, 25 Aug. 1869. He was graduated at London University in 1893, having entered the ministry the previous year. He has been a member of the Connexional Board of Examiners since 1899 and was examiner in classics at Didsbury College in 1909. His publications include 'The Transfiguration of Jesus'; 'The Roman See in the First Centuries'; The Rise of the Papacy.' He is a frequent contributor to periodical literature, including the London *Quarterly* and the *Homiletic Review*.

**BEET** (AS. bete; Lat. *beta*), *Beta vulgaris*, a plant of the family *Chenopodiaceæ*. There are several forms of the species, mostly biennials, with stalked, smooth, ovate leaves, with flowers borne on tall leafy stems. The original form, or sea-beet, is found growing wild in sandy soil, near the sea, in Europe and western Asia. It has been in cultivation since 200–300 B.C., and to-day the numerous varieties may be classified under one of five sections, although the divisions are arbitrary and of no great importance.

**Garden Beets.**— These usually have small tops, with turnip-shaped to tapering roots of medium size, fine-grained, smooth, regular, generally red but sometimes yellowish or whitish in color. Among popular varieties are Early Blood, Eclipse, Bassano and Egyptian turnip. The soil best suited is a loose, rich, deep, clean, well-tilled loam. Well-rotted barnyard manure with some potassic fertilizer is often applied. Seed is sown as soon as possible in the spring, for the early crop, with other sowings until June to ensure a succession; in rows, varying from one foot apart, where intensive gardening is practised, to three feet where horse labor is used. The plants are thinned from four to six inches asunder in the rows, care being taken to leave only one plant in a place. Thinning is often done when the young plants are large enough to sell as "greens." The late crop, if required for winter use, must be stored before frost. Beets are sometimes forced under glass.

**Mangold Wurzels** or **Mangels** are a large, coarse form raised for cattle-feeding. Standard varieties include Mammoth long red, Golden tankard and Globe. Seed is sown as early as possible in the spring, in rows two to three feet apart, and the plants allowed to stand 12 to 16 inches asunder in the row. To ensure a good crop the land must be in a high state of cultivation and well supplied with plant-food. They may be grown on alkali soils.

**Sugar-Beets.**— The varieties are rather small-growing, and nearly always yellowish or whitish in color. They contain a high percentage of sugar, which has been increased by selection and cultivation. They are extensively grown in Europe and in the Northern and Western States. See BEET SUGAR.

**Chard** or **Swiss Beets** have comparatively large leaves with succulent leaf-stalks, which are cooked and eaten like asparagus. See CHARD.

**Foliage Beets** are grown for ornamental purposes. The luxuriant foliage is of many colors and varied in markings. Brazilian, Chilean, Victoria and Dracæna-leaved are well-known varieties. They may be raised from seed, like other beets, and the roots lifted in fall and kept over winter.

**Uses and Feeding Value.**— As a vegetable the root of the garden beet is boiled, pickled, and used as a salad; and the tops are boiled as "greens." They contain on an average 88.5 per cent water; 1.5 per cent protein; 8 per cent nitrogen-free extract; 1 per cent ash; 0.1 per cent ether extract, and 0.9 per cent crude fibre. Mangels are fed to cattle; they contain from 7 per cent to 15 per cent dry matter, of which about 88 per cent is digestible; an average percentage composition may be taken as: water, 90.9; protein, 1.4; nitrogen-free extract, 5.5; ether extract, 0.2; ash, 1.1; crude fibre, 0.9. About 77 per cent of the protein or 96 per cent of the nitrogen-free extract is digestible. The dry matter of mangels and corn silage are of about equal value for feeding, but as the cost of production in mangels is double that in corn, stockmen in the United States have not paid much attention to them.

**Enemies.**— Beets are sometimes injured by the beet-fly, otherwise they have few insect enemies. They are sometimes attacked by rust, rot, leaf-spot and scab. Spraying with Bordeaux mixture will prevent the leaf diseases. Scab attacks the root, and as it also attacks the potato these crops should not be grown in succession.

**Beet Pulp** is a by-product of sugar-beet factories, consisting of sliced sugar-beets after the sugar is removed. It contains about 10 per cent dry matter, the remainder being water, and in the wet condition must be fed at once or held in silos. It may be fed to milch cows, fattening steers and sheep, and ranges in value from half to two-thirds the value of corn silage. Some of the factories have erected sheds and feed large quantities of it to stock with the addition of hay and grain.

**BEET SUGAR**, the sugar obtained from the beet, similar to cane sugar. The discovery of sugar in the beet was made by a German chemist, Marggraf, as early as 1747. No practical results followed his discovery, however, as the cost of obtaining sugar from the beet by laboratory methods was too high as compared with that of cane sugar. Little progress was accomplished until about 50 years later, when another German chemist, Achard, succeeded in extracting sugar from the beet root on a comparatively large scale. In 1802 a manufactory was in operation in Silesia, in which, under Achard's direction, about 20 quintals of beets were worked up daily, and about five pounds of raw sugar extracted from every quintal. The high price of sugar prevailing at that time all over the European continent by reason of the blockade, and the great interest and favorable attitude taken by the different continental governments toward the new experiment, caused it to be a success for a short time. Napoleon issued an imperial decree in the early part of his reign, establishing this industry in France, and in 1812 he ordered the building of four factories and placed Chaptal in charge. In 1830 attempts were made in the United States to introduce the cultivation of the sugar-beet. It was not, however, till 1870 that the first successful beet-sugar factory was built, at Alvarado, Cal.

**The Industry in the United States.**— The production of sugar-beets and of beet sugar in the United States is now assuming such proportions that, with the increase of factories and the marked popular interest, it has become one of the leading subjects demanding consideration from agriculturists. There is probably no other industry in this country that has developed so rapidly and now absorbs so large a share of public attention as that of beet sugar.

Attempts were made to establish the industry in Massachusetts in 1838. There were also efforts in this direction in Illinois, Wisconsin and California between 1863 and 1876, and much was claimed for the industry at this time by newspaper writers, capitalists and leading

farmers. In California, after a long period of unprofitable production, it achieved its first success in 1879. The failure of these early attempts seems now very natural as we look back over the history of agricultural progress in the United States. The beet-sugar industry belongs to the domain of agriculture, and the problems it presents are agricultural. These early efforts were simply ahead of their time in the course of agricultural development, and they failed in the establishment of the beet-sugar industry for want of the proper methods of farming and the proper conditions underlying the farming industry.

At the time of the first attempts at sugar-beet production, agriculture comprehended simply the primary features. Its products were confined mainly to cereals, forage crops and live stock, and the production and marketing of raw materials was its main object. The farmer in those early days did not concern himself with enterprises dependent on the concentration of efforts in the production of finished products. Land could be purchased for a few dollars per acre. If the prospective farmer did not have the money to buy the land he could enter a claim on government land. His whole ambition was to produce something quickly and pay for the lands and primary improvements. This was accomplished by raising corn, wheat, oats, cattle and hogs. The open public domain offered a free pasture. Gradually the Eastern sections became more densely settled, and farm lands became more expensive. Crude production was accomplished more cheaply by the Western farmer. Later, owing to development of transportation facilities, the agriculture of this country had to compete with the cheap labor of Europe. The colonial extension of European countries brought areas into competition with American farms in turning out crude products, and with labor much cheaper even than that of Europe. The problem became, how to turn crude material into something that would represent not merely the labor but the skill and ingenuity of the American people, thus supplying our own markets and those of the world with finished products. The American farmers found, as the manufacturers had found before them, that their success depended upon the superior skill and artisan ability of Americans as compared with Europeans and their colonists. "Necessity is the mother of invention," and demand and necessity united in the evolution of a new system. This began in the East, working westward, in the production of butter, cheese, prepared meats, flour, eggs, poultry, etc. Later came the establishment of other industries, working up crude products of the farm into finished articles. We became producers of syrups, canned vegetables, canned fruits, etc., until manufacturing re-inforced farming from ocean to ocean. When all this was accomplished, the time was ripe for the success of the beet-sugar industry.

**Industrial Features.**— It is one of the marked features of American industrial life that the people as a mass have always shown a readiness to forego immediate benefits, and, even at considerable expense to themselves, to encourage industrial development. As a result this country has made a record among the nations of the earth unparalleled in rapid development, accumulation of wealth and hold on the trade of the world.

One of the chief items of cost in the production of anything is labor. In this country it is contended that the laborer is not only entitled to earn a living, but to live comfortably, to be able to educate his family and to acquire a comfortable home. There is no position in life, social, financial or political, to which the laboring man may not aspire. While this means much for the citizen, it adds materially to the cost of production. This country to-day is the concern of the nations of the earth in being able to maintain a balance of trade in its favor through its agricultural and industrial productions, and this balance is constantly increasing. The sugar industry is supported by American enterprise and spirit, and under this American policy it is rapidly assuming a prominent position in the long list of successful industries.

There are two sides to the proposition of establishing a sugar factory in any particular community: (1) That of the farmer, involving agricultural conditions; and (2) that of the manufacturer or those financially interested in the enterprise.

**Problems for the Farmer.**— The leading difficulties of the farmer may first be noticed. To begin with, he is unacquainted with the methods of cultivating the sugar-beet plant, and his first experience usually proves unsatisfactory. He is accustomed to certain methods in farming. As a rule he is conservative, and thinks, from his long experience in farming, that he knows how to farm. He undertakes to apply methods successful in the cultivation and production of other crops. He is not inclined to listen to those who are informed in methods applicable to the new crop. Eventually he finds out his mistake. He finds that in growing sugar-beets he must apply principles, in many cases, the reverse of those necessary to other crops. For instance, he has been accustomed to growing large ears of corn, large hogs and large steers; but in the case of sugar-beets he finds that the first question is not one of size, but of quality. He must grow beets of a certain size, purity and sugar content. In order to accomplish this he must give careful attention to the work of preparing the land, planting the seed, bunching, thinning and cultivating. He finds that attention to details counts in results at the harvest in the profits on the crop. He learns that the whole process is a very laborious and expensive one, entirely unlike anything he has attempted before. To be successful he must apply the methods of the gardener to a field crop. He must have a rich soil, and the proper rain conditions at the proper time. These facts can only be learned through experience.

**The Question of Labor.**— The labor problem is important in the cultivation of sugar-beets. At certain stages of their growth they require a considerable amount of labor. This labor is very tiresome. As a rule, the farmer, if he grows beets to any extent, does not have on his farm sufficient labor to do the work of thinning and bunching, hoeing and harvesting the sugar-beets; nor does any farming community possess to any considerable extent the labor necessary to grow the beets that a factory will require in a campaign. It will cost about $30 an acre in sections where sugar-beets are

grown under rainy conditions, and about $40 to $45 an acre in sections where beets are grown by irrigation, to cover the cost of seed, preparation of seed-bed, bunching and thinning, hoeing, cultivating, harvesting and delivering to the factory. These estimates apply to growing sugar-beets when it is properly done. In the farming communities of foreign countries, as a rule, a large amount of suitable labor can be secured in the neighborhood, because these neighborhoods are more thickly settled; the whole population is willing to do the laborious, tedious work required, and whole families work at it, including the father, mother and children. In this country, as a rule, the farmer, his older sons and hired hands must attend to the outdoor work. It has been found necessary for sugar-beet growers to resort to the cities and towns for extra labor required. In the cities live many foreigners from Holland, Russia, Sweden and other places, who are thoroughly familiar with this kind of work. These people are willing to move out into the fields and live in tents; they make contracts at so much per acre for bunching and thinning, hoeing, weeding and harvesting. Since the agitation and starting of the beet-sugar industry in this country, foreigners are coming with a view to securing employment of this kind. While the labor question is a serious one, it is one capable of solution by careful and detailed attention.

**Problems for the Manufacturer.**— The manufacturer or the capitalist who builds a factory finds that he has even more problems to work out than the farmer, and, like the farmer, he usually discovers that he is entering a field that is entirely new to him. Before establishing his plant the prospective manufacturer must investigate certain conditions: (1) The water supply, for he must have an abundant supply of pure water for the use of the factory. (2) The fuel supply, as the factory must be located in a section where cheap fuel can be secured (the fuel usually used is coal, but on the Pacific coast petroleum is used to a large extent). (3) A market for the product (this factor should be thoroughly canvassed and settled prior to establishing a factory). (4) The supply of lime (the local quarries of lime rock must be investigated to see if the quality is suitable and the supply sufficient, as a large amount will be required).

The general conditions having been found satisfactory, and the factory being built, other problems arise. In the beginning only a limited amount of skilled labor is employed. Eventually every employee of the factory will become skilled in his particular part. After two or three campaigns have passed the factory will have worked out the details of producing the best product at the least cost with the machinery which it has. When this point shall have been reached those interested will be prepared to estimate the cost of production of beet sugar. The difference in cost of production at a new factory and at one operated for a considerable time is much greater than one acquainted with the subject would suppose.

**Statistics of the Industry.**— The first established successful American beet-sugar factory is located at Alvarado, Cal. It was erected in 1870, but success was not attained until 1879. In 1896 in the United States there were seven factories, which produced 42,000 tons of sugar. Since 1896 the expansion has been rapid and there now (1917) are 99 factories, which in 1915 produced 874,220 tons of white granulated sugar, valued at approximately $97,000,000. Since 1889, the total output has amounted to 7,613,000 tons, of an estimated value of $760,000,000. From 1889 to 1915 $300,000,000 has been paid to farmers for beets and considerably more than that amount for other supplies, labor, etc. The industry now employs between 30,000 and 40,000 men and annually disburses $75,000,000, nearly one-half of which is paid to farmers for beets.

The factories as at present located, together with their daily beet-slicing capacity, are as follows: *California:* Alvarado, 800 tons; Chino, 1,100 tons; Los Alamitos, 800 tons; Betteravia, 1,000 tons; Oxnard, 3,000 tons; Spreckels, 4,500 tons; Hamilton City, 700 tons; Manteca, 1,200 tons; Visalia, 400 tons; Corcoran, 600 tons; Santa Anna, 600 tons; Huntington Beach, 1,200 tons; Anaheim, 1,200 tons; Dyer, 1,200 tons; Tracy, 600 tons; *Colorado:* Brighton, 1,000 tons; Grand Junction, 700 tons; Rocky Ford, 1,800 tons; Sugar City, 600 tons; Loveland, 1,920 tons; Greeley, 1,000 tons; Eaton, 1,200 tons; Fort Collins, 2,150 tons; Longmont, 2,350 tons; Windsor, 1,150 tons; Lamar, 500 tons; Sterling, 1,000 tons; Brush, 1,100 tons; Fort Morgan, 1,200 tons; Swink, 1,200 tons; Las Animas, 1,000 tons; *Idaho:* Idaho Falls, 900 tons; Shelley, 750 tons; Blackfoot, 800 tons; Sugar City, 900 tons; Burley, 600 tons; Twin Falls, 600 tons; *Illinois:* Riverdale, 500 tons; *Indiana:* Decatur, 800 tons; *Iowa:* Mason City, 1,200 tons; Waverly, 500 tons; *Kansas:* Garden City, 1,000 tons; *Michigan:* Bay City, 1,500 tons; West Bay City, 900 tons; Holland, 500 tons; Caro, 1,200 tons; Alma, 1,400 tons; Marine City, 600 tons; Lansing, 600 tons; Bay City (Salzburg), 1,400 tons; Saginaw (Carrollton), 900 tons; Mount Clemens, 600 tons; Croswell, 750 tons; Saint Louis, 600 tons; Owosso, 1,200 tons; Menominee, 1,200 tons; Blissfield, 868 tons; Sebewaing, 85 tons; *Minnesota:* Chaska, 800 tons; *Montana:* Billings, 2,000 tons; *Nebraska:* Bayard, 1,000 tons; Gering, 1,100 tons; Grand Island, 500 tons; Scotts Bluff, 2,000 tons; Missoula, 1,000 tons; *Nevada:* Fallon, 500 tons; *Ohio:* Fremont, 500 tons; Paulding, 900 tons; Findlay, 871 tons; Ottawa, 600 tons; Toledo, 1,100 tons; *Oregon:* Grant's Pass, 750 tons; *Utah:* Brigham City, 500 tons; Delta, 1,000 tons; Lehi, 1,266 tons; Moroni, 400 tons; Ogden, 1,000 tons; Logan, 600 tons; Garland, 900 tons; Lewiston, 800 tons; Elsinore, 750 tons; Payson, 700 tons; Layton, 700 tons; Spanish Fork, 1,000 tons; Smithfield, 500 tons; West Jordan, 750 tons; Cornish, 600 tons; *Washington:* North Yakima, 750 tons; Waverly, 500 tons; *Wisconsin:* Menominee Falls, 600 tons; Janesville, 700 tons; Chippewa Falls, 600 tons; Madison, 600 tons; *Wyoming:* Lovell, 600 tons; Sheridan, 900 tons; Worland, 600 tons.

At many other places preliminary organizations have been formed which are only awaiting developments assuring more settled conditions affecting the sugar industry.

The relative importance of the beet-sugar industry can best be gathered from the following statistics of the sugar production and consumption of the world. The United States is the world's greatest consumer of sugar. A

compilation by The National City Bank of New York shows that the consumption of sugar in the United States for the fiscal year 1917 was but 82 pounds per capita against 89 pounds in 1914 (the year preceding the war). The total quantity consumed in 1917 was, however, 8,500,000,000 pounds and we also exported 1,250,000,000 pounds, or 25 times as much as in the year before the war.

The bank's compilation shows that the world's sugar production is now about 12 per cent below that of the year preceding the war. Beet-sugar production in Europe has fallen 43 per cent but cane production in the tropics has increased about 25 per cent. The beet-sugar of Europe, which was 18,500,000,000 pounds in the sugar year 1912–13, was but 10,500,000,000 pounds in 1916–17, and the world cane production, which was a little more than 20,000,000,000 pounds in 1912–13 was over 25,000,000,000 pounds in 1916–17; world production of cane and beet sugar in 1913–14 was 42,000,000,000 pounds; in 1916–17, 37,000,000,000 pounds. Beets produced one-half of the world's sugar prior to the war, but in 1916–17 supplied only one-third of the world's total. In the United States and its island possessions there has been a rapid increase in production. In every one of the sugar areas under the American flag — Porto Rico, Hawaii, the Philippines, and the cane and beet fields of continental United States — there has been a marked increase, the aggregate product of these areas having grown from about 4,000,000,000 pounds in 1912–13 to practically 5,000,000,000 pounds in 1916–17. The share of our consumption drawn from foreign countries has fallen from 75 per cent in 1897 (20 years ago) to 48 per cent in 1917. In consumption of sugar the United States stands at the head of the list of the world countries, our total consumption being 8,500,000,000 pounds in the fiscal year 1917 against approximately 5,000,000,000 in Germany, 5,000,000,000 in the United Kingdom, and 2,000,000,000 in France, the figures for the European countries being those for normal years. Our per capita consumption, however, is less than that of certain other countries, Denmark's consumption being 93 pounds per capita, England 90, United States 82, Germany 75, Norway and Sweden 60, Netherlands 73. France 40, Russia 30, Spain 15 and Italy 10. About 25 per cent of our consumption is drawn from our own fields, 27 per cent from our islands and 48 per cent from foreign countries, chiefly Cuba. The value of the sugar entering continental United States was, in the fiscal year 1914, $155,000,000 and in 1917 $348,000,000, the average import price per pound (including that from the islands) having been, in 1914, 2.3 cents, and, in 1917, 4.6 cents. Our exports of sugar have grown very rapidly during the war, having been, in 1914, 50,000,000 pounds, in 1915 550,000,000, and in 1917 1,250,000,000 pounds, the value of the exports increasing from less than $2,000,000 in 1914 to over $77,000,000 in 1917. Of the 1,250,000,000 pounds exported in 1917, 450,000,000 went to France, about 150,000,000 to Great Britain, 50,000,000 to Italy, 250,000,000 to neutral Europe and about 150,000,000 pounds to South America. The world's chief producers of cane sugar are Cuba, India, Java, the Hawaiian and Philippine Islands, and Porto Rico; and the chief producers of beet sugar are Germany, Russia, Austria-Hungary, France and the United States. Cuba, from which we draw our chief imports, is now the world's largest producer, her crop in the sugar year 1916–17 having been 6,730,000,000 pounds; India 5,882,000,000; Java 3,575,000,000; Hawaii 1,288,000,000 and Porto Rico 1,006,000,000 pounds, while Germany's beet-sugar production in 1913–14 (the latest peace year) was 6,093,000,000, Russia 3,898,000,000, Austria-Hungary, 3,774,000,000, France 1,749,000,000, the United States in 1916–17 1,646,000,000 pounds of beet sugar and 613,000,000 pounds of cane. The world's sugar production, as far as can be statistically stated was in 1870 5,000,000,000 pounds, in 1880 7,000,000,000, in 1890 13,000,000,000, in 1900 20,000,000,000, in 1910 33,000,000,000, in 1914 42,000,000,000, and in 1917 37,000,000,000 pounds, this fall off in 1917 being due to a reduction of product in the beet fields of the European countries at war. Our own consumption has about kept pace with this rapid growth in world production, since we consumed in 1870 23 per cent of the world's output and in 1917 21 per cent of the world total.

**Methods of Growing Sugar-Beets.**— It would be quite difficult to give general directions and rules for growing sugar-beets applicable to all localities and conditions. Often expert sugar-beet growers, at public meetings and in the agricultural press, give minute directions covering all the details of this intricate process. Others, each well versed in the process of growing sugar-beets, get into arguments and disputes as to the right method. In such cases each may be correct in a measure. The occasion for such disagreements lies in the fact that each person has in mind the right method for a particular locality or set of conditions. A careful study of the different sections of the United States where sugar-beets are grown will lead to the conclusion that there is no single road to success in growing sugar-beets. Every locality has settled conditions which will materially modify any set of methods that might apply to some other one. There are some settled rules, of course, but it is a fact that the various agricultural districts of this country will have to work out each for itself the right method. The person who argues that the ground must be plowed in the fall in order to receive the benefit of winter frosts is not offering any argument to the Pacific coast, for instance, where many beets are grown, and he who insists that the ground should be rolled in all instances after planting will hazard the crop if his directions are followed in many parts of Nebraska and other sections where the soil is sandy and there are strong winds. In such cases a smooth surface offers an excellent opportunity for the wind to carry along the sharp grains of sand, cutting off the plants and destroying the crop.

There can be no general fixed rules applying to the kinds and application of fertilizers. General principles are all right when accompanied with the underlying reasons, but they must always be modified to meet local conditions.

With the development of the industry in all the sections which have the necessary conditions, and the acquirement of ample experience both by the farmers in the production of beets and by manufacturers in the making

of sugar, there will come many improvements, and eventually a cheapening of production, a result of great importance to all concerned in the success of the industry, because eventually the beet-sugar industry in the United States will have to meet a sharper competition with foreign sugar producers.

There are some things settled, however, about growing sugar-beets. It will generally be conceded that the ground should be plowed deep and manured. Before the seed is planted, the ground must be thoroughly pulverized by harrowing and by rolling, even if the surface has to be afterward roughened. Advantage must be taken of the general and prevalent rain conditions. The ground must be moist enough to germinate the seed, either by rainfall or irrigation. Rainfall is best when it can be obtained. In some localities either is used, according to circumstances. Seeds are planted at depths of from half an inch to two inches, according to the prevailing conditions in the particular locality. The beets must be planted near enough together to produce a beet of a certain size. This spacing depends, again, upon the locality and the nature and fertility of the soil. The size and quality of the beet depend materially on the right kind of spacing. The beets must be thoroughly cultivated, hoed and hand-weeded, because cultivation tends to conserve the moisture of the soil, and clean fields permit favorable action of sun and air. This close cultivation should be kept up until the beet tops thoroughly shade the ground and reach a size when it would be injurious to operate among them further with a plow and hoe. The beets should be harvested as soon as possible after they are ripe, because then they contain the most sugar and the highest purity. It is evident that the entire crop of beets in the neighborhood of a factory cannot be harvested at once. In many localities some will have to be siloed temporarily in pits in the fields. Harvesting-time will depend a great deal upon circumstances connected with the operation of the factory. The sooner the beet is harvested after it is ripe the better, because further rainfall may start a new growth, producing new lateral roots and new leaves, thus greatly reducing the sugar content and purity of the beets.

**Benefits to the Farmer.**— No statement of facts with reference to any new crop would be complete or would indicate the advisability of its introduction unless it showed the benefits to be derived. Of course, profit and loss in any enterprise is the first consideration.

It has already been stated that it costs about $30 per acre to produce sugar-beets and to market the crop where rain conditions prevail. This is without taking into consideration the rent of the land, but it includes the farmer's time and everything else that enters into the cost of production. The average United States yield during the five-year period 1911–15 was 10.17 tons per acre and the price paid farmers per ton in 1915 was $5.67, thus giving a gross average cash return of $57.66 per acre. To this amount should be added the feeding value of the leaves and tops, usually estimated at $3 per acre, also the value of the increased yield of other crops for three to five years after following a crop of beets. This increased yield amounts to 25 to 60 per cent and is the greatest of all incentives to stimulate beet culture. It must be kept in mind that these are averages of gross and net proceeds. It is never very encouraging to consult the average of agricultural crop statistics; indeed, it is often said that "the average crop does not pay." If one should take the figures of the average crop of corn in Iowa, for instance, or the average crop of wheat in Minnesota or Kansas, and compute the proceeds at the average market price, and deduct therefrom the cost of production, the results would show a very small remuneration or an actual loss, quite discouraging to one who has not investigated this subject.

Many growers formerly received as high as $75 and some $100 per acre for their beets, these high results depending upon the superior quality of the land and the superior skill of the one producing the beets. If a farmer has poor land or is an unthrifty farmer, he is not in a position to expect much in planting any kind of crop. These statements are sufficient to give a farmer who is experienced in all other kinds of crops a fair insight into the situation.

Conditions in the sugar marts of the world resulting from the World War have naturally caused a general dislocation in the beet-sugar field also, where unusually high prices obtain, and under present conditions the future cannot be forecast with any degree of accuracy, but the outlook for the producer is assuring.

There are indirect benefits in sugar-beet growing that the farmer must take into consideration, along with the direct, as follows: He learns that sugar-beets are a very valuable crop to grow for his stock. It is estimated that they are worth two-thirds as much for feeding as for production of sugar. They may enter into a food ration for any kind of stock. A normal acre of sugar-beets furnishes about 2,000 pounds of digestible matter in form of the tops and leaves removed before beets are delivered at the factory. An average acre of corn ensilage contains about 3,600 pounds of digestible matter. Therefore, besides getting a good cash return for his beets the farmer gets from each acre of beets the equivalent of one-half an acre of ensilage.

The high cultivation that must be given to the land through deep plowing, thorough harrowing and constant weeding and cultivating finally makes the land of superior quality for any purpose. It will grow much more and better corn or wheat, and at a less expense, on account of the absence of weeds and grass. Finally, through rotation, other fields are brought under this high state of cultivation, until the whole farm is at its best condition of soil fertility and productiveness.

The method that has brought this about serves as an object-lesson to the farmer and the farming neighborhood. A better cultivation will prevail, and the science of farming will become several degrees higher on account of experience in sugar-beet cultivation.

After the beets are delivered to the factory, and the sugar has been extracted, it is found that the pulp (which will amount to 50 per cent in weight of the beets worked) is almost as valuable for feeding purposes as the original beets themselves. It is a very cheap feed and sells for 50 to 75 cents per ton. It enters naturally and profitably into the food

rations of all kinds of stock. It is especially valuable for steers and lambs, but reaches its highest use as animal food when fed to the dairy cow. The farmers in the neighborhood of a beet-sugar factory feed large quantities of it. They appreciate its nutritive and sanitary value. Pulp feeding gives an impetus to animal industry of all kinds. It offers a stimulus to the establishment of butter and cheese factories, to the erection of feeding-pens and to the whole stock-feeding industry. Its use is a strong reason for establishing the industry.

The beet-sugar industry opens up at once a large demand for labor, not only in the factory itself, but on the farm. It is one of the things in which the farmer can invest with the assurance that he has a sure market and a fixed price for his crop to begin with.

**Benefits to Other Industries.**— The establishment of a beet-sugar factory opens up not only a large field for the employment of labor, but also a field for the employment of capital. It becomes at once a market for considerable crude material to be used in conducting the business. First and most important it furnishes a market for the beets. Then the factory is a large consumer of coal, and as the factories are often established in communities having local coal fields they become at once local markets for a local product. The amount of coal necessary to work up a certain amount of beets is generally computed at about 20 per cent by weight, or, in case of an ordinary factory of 1,000 tons capacity, about 200 tons of coal per day, or 20,000 tons for a full campaign of 100 days. A factory also consumes a large amount of lime rock, which of necessity must also be a local product. It usually consumes lime rock to the extent of about 8 per cent of the crude weight of beets worked, which in the case of a 1,000-ton factory would be 80 tons of lime rock per day, or 8,000 tons for the campaign. It consumes about one-tenth as much coke as lime, or about 1,000 tons during a campaign.

The establishment of a factory in a community necessitates considerable transportation of crude products — beets, coal and lime rock — to the factory, and in carrying the finished product to the market. It stimulates banking and almost all kinds of mercantile business throughout the community.

The total expenditure for beets, manufacturing and transportation by the factory is not far from $100 per acre of beets harvested, most of which is disbursed in local channels and which furnishes one of the best means of an intensification of economical activities in rural communities.

**The Future of the Industry.**— The present consumption of sugar in the United States is 8,500,000,000 pounds of which beet and Louisiana cane sugar furnish about 25 per cent, 27 per cent comes from our insular possessions and 48 per cent comes from foreign countries, mostly from Cuba.

It has been the ambition of those encouraging the beet-sugar industry to establish factories enough at least to avoid this foreign importation. Making due allowance for failure of factories to reach in actual production their full capacity under ideal conditions, it would require 160 factories having a daily capacity of 1,000 tons of beets to produce the sugar imported, or a sufficient number of cane-sugar factories to produce an equal amount of sugar. To build and equip these factories will require an expenditure of $250,000,000 in labor, building materials and machinery. The annual requirements of these will be as follows:

ANNUAL REQUIREMENTS OF 160 BEET-SUGAR FACTORIES

| | | |
|---|---|---|
| Beets required | tons | 16,000,000 |
| Cost of beets | | $88,000,000 |
| Coal required | tons | 3,200,000 |
| Cost of coal | | $10,000,000 |
| Lime rock required | tons | 1,300,000 |
| Cost of lime rock | | $3,250,000 |
| Coke required | tons | 130,000 |
| Cost of coke | | $400,000 |
| Cost of sugar bags | | $6,000,000 |
| Cost of factory labor | | $16,000,000 |

In addition to the foregoing list large amounts of money have been paid for mill supplies, transportation, etc. As working capital to operate these factories $135,000,000 was required. This sum being in use, however, for about four months in the year, the interest charged thereon is equal to an interest charge on $45,000,000 for one year. The above estimates do not include capital already invested in the business and operations of factories already built, the statement of which is as follows:

PRESENT DEVELOPMENT OF THE BEET-SUGAR INDUSTRY

| | | |
|---|---|---|
| Capital invested in factories, equipment, and grounds | | $100,000,000 |
| Beets purchased annually | tons | 7,090,000 |
| Cash paid for beets purchased annually | | $38,500,000 |
| Coal consumed annually | tons | 1,400,000 |
| Cash paid for coal annually | | $4,200,000 |
| Lime rock purchased annually | tons | 560,000 |
| Cash paid for lime rock annually | | $1,300,000 |
| Coke purchased annually | tons | 56,000 |
| Cash paid for coke annually | | $170,000 |
| Cash paid for labor annually | | $8,000,000 |
| Operating capital annually employed | | $20,000,000 |

Also there is a considerable amount annually expended for crude material and various other things. It hardly seems possible that an industry which affects so many people over such a wide scope of country can fail to receive anything but the most friendly, careful and fostering consideration on the part of those who shape industrial affairs.

The immensity of future demands, it seems, answers effectually those who feel that the industry might be overdone. Attention should be called to the fact that not only are present demands great, but that the rate of increase of consumption is considerable. According to statistics for the last 19 years, consumption of sugar in the United States has been increasing at the average rate of about 6½ per cent annually.

AARON GOVE,
*Representative of the Beet Sugar Industry in the Arid States.*

**BEETHOVEN,** bā-to-fen, **Ludwig Van,** the greatest orchestral composer of the 19th century: b. Bonn, 16 Dec. 1770; d. Vienna, 26 March 1827. While classed among the German masters, the Dutch Van in his name (which is not a sign of nobility) indicates his descent from a family in the Netherlands, the world's musical centre in the 15th and 16th centuries. This family moved in 1650 from Louvain to Antwerp. Beethoven's grandfather was a bass singer and a conductor; his father was a tenor, who did not lead an exemplary life; his income was only $150 a year, wherefore it is not

**BEETHOVEN**

surprising that he eagerly availed himself of his son's musical talent and exploited it. He personally taught Ludwig to play the violin and the clavier, in the hope of making of him a «wonder-child» like Mozart. While Ludwig was not remarkably precocious (he even shed tears over his music lessons), he is said to have written a funeral cantata at 11, and in the same year was taken on a concert-tour by his father, who, to make his performances seem more remarkable, represented him as being two years younger. Before he had reached his 12th year the organist Neefe spoke of him as «playing with force and finish, reading well at sight, and, to sum up all, playing the greater part of Bach's 'Well-Tempered Clavier,' a feat which will be understood by the initiated. If he goes on as he began, he will certainly become a second Mozart.»

Mozart himself appears to have been of this opinion, for when he heard young Beethoven improvise in Vienna he exclaimed to the bystanders, «Keep your eyes on him! He will give the world something to talk about!» This was in 1787. Beethoven had been sent to Vienna in the hope that he might be able to take lessons of Mozart; apparently he did take a few, but the illness of his mother made him hasten back to Bonn. Although Bonn was a small town, it had quite a musical atmosphere, and Beethoven had good opportunities to become acquainted with the operas and the concert pieces then in vogue. He was only 13 when he got a position as assistant court organist, and subsequently he played the pianoforte accompaniments at the rehearsals of the opera orchestra. He also played the viola. His first salaried position ($63 a year) was as assistant organist under Reicha. The most important occurrence of the Bonn period was the formation of an intimate friendship with Count von Waldstein, to whom he subsequently dedicated one of his best sonatas. The Count had promptly recognized his genius, and it was probably owing to his suggestion that the Elector of Cologne, Max Franz, decided to provide the young musician with the means for going to Vienna again and there continuing his studies with Haydn, to whom Beethoven had already been introduced when Haydn stopped at Bonn, in 1790, on his way to London. It was in November 1792, nearly a year after Mozart's death, that Beethoven entered Vienna, which was to remain his home till the end of his life. The lessons from Haydn were duly arranged for and the first was given in Haydn's house on 12 December, the payment being eight groschen (about 20 cents). But Haydn, like most creators, was not a good teacher and although Beethoven took lessons of him more than a year, he soon began to take his exercises for correction to Schenk before showing them to Haydn. He subsequently took lessons of the pedantic contrapuntist Albrechtsberger, who, however, complained that his pupil was unwilling to «do anything in decent style» and had too little respect for rules — this last being a peculiarity which he, fortunately, soon began to manifest in his compositions. To these compositions he was so lucky as to be able to devote nearly all his time. From his father he received no pecuniary assistance, but there were several sources of income. Prince Lichnowsky gave him an annual stipend of 600 florins, and when, in 1809, an attempt was made to entice him to Kassel, where a position as Kapellmeister was offered him, some of his princely friends gave him an additional annuity of 4,000 florins, to chain him to Vienna. This lasted only till 1811, but at this time he was already deriving a considerable income from the sale of his works. Many of his letters show that he knew how to make a good bargain. Had it not been for a spendthrift nephew, of whom he was very fond, and for whom it was found at the time of his death he had even placed 7,000 florins in the bank, he would have never suffered any financial tribulations such as Mozart and Schubert had to endure all their lives.

It was fortunate that the Kassel offer was refused, and that an earlier attempt (in 1796) to win him for Berlin had also led to naught; for Vienna was the proper place for Beethoven. It was at that time the world's musical centre, owing largely to the unusual interest taken in music by the aristocratic circles. To understand the significance of this fact we must bear in mind that at that time there were few public concerts; it was the nobility who maintained the orchestras and patronized the great artists, the audiences being invited guests. Beethoven brought with him from Bonn letters of introduction to leading members of the aristocracy, and thus found himself at once «in the swim.» He had not yet done anything very remarkable as a composer and was at first admired chiefly for his improvisations on the pianoforte; but gradually a sense of his greatness dawned on his patrons, who bore patiently all his eccentricities. While recognizing the advantage of being intimate in the houses of the aristocracy, he never truckled to rank and refused to submit to the intricate and artificial rules of court etiquette. At the same time he expected the aristocrats to behave like ladies and gentlemen; one day when a young man talked loudly while he was playing, he suddenly stopped and exclaimed: «I play no longer for such hogs.» His attitude toward wealth is illustrated by his once sending back his brother's card on which «Johann van Beethoven, land proprietor» was printed, after writing on the back: «Ludwig van Beethoven, brain proprietor.»

In the homes of some of his aristocratic friends he gave lessons to the women and girls. He did this unwillingly, looking at the time thus spent as filched from his compositions. He often failed to keep his appointments and was apt to be irascible and bearish; but his fair pupils were only too glad to put up with all this for the sake of the benefit they got from his lessons. He was, at the same time, a great admirer of women and often in love, although none of his infatuations appears to have lasted more than seven months. He was never married, for although he repeatedly proposed he was each time refused. These love affairs call for mention because they had an influence on not a few of his compositions. A well-regulated household was a blessing he greatly needed. His eccentric habits were forever forcing him to change his lodgings and he seldom could keep a servant longer than a few weeks. If his cook brought him a bad egg he threw it at her. He often got angry when the servants laughed at the sight he presented while composing — toss-

ing his hands about, beating time with his feet, and singing or rather, growling. His rooms presented scenes of great disorder. His gastronomic habits were unwise, and the dyspepsia they gave rise to was responsible for much melancholy and for many of the outbreaks of ill-temper for which he became notorious as he grew older. While naturally of an affectionate disposition (as instanced in his fondness for his nephew) and always fond of jokes, he would, on occasion, insult and abuse his best friends on slight provocation; but these outbursts of irascibility were usually followed by the most abject apologies. He was, in short, like his music, highly emotional and regardless of rules.

The chief cause of his growing moroseness and irritability was the difficulty of hearing which began in 1798 and gradually ended in complete deafness. In 1802 (25 years before his death) he wrote in his last will: "O ye, who consider or declare me to be hostile, obstinate, or misanthropic, what injustice ye do me! Ye know not the secret causes of that which to you wears such an appearance"; and he proceeds to speak of his hearing, which had been growing more and more defective for six years, and which made him shun people, as he did not wish to say constantly: "Speak louder—bawl—for I am deaf." His last appearance in public in concerted music was in 1814. Two years later he began to experiment with ear-trumpets, his collection of which is now in the Royal Library of Berlin. His attempts to conduct after this usually led to mortifying and pathetic scenes. The last was in 1824, when, although totally deaf, he insisted on conducting his ninth symphony; he could not even hear the applause which followed it. All communication with him was, in the last years of his life, carried on with the aid of pencil and paper. The autopsy showed that not only were the auditory nerves practically paralyzed, but there were other advanced troubles (the liver was tough as leather and shrunk to half its normal size), which made it remarkable that he should have retained his vitality so long. The immediate causes of death were inflammation of the lungs and dropsy. A week before his death he was still busy with letters and with plans for new compositions, including a tenth symphony, a requiem and music to Faust. He died during a violent thunder and hail storm, about six o'clock on 26 March 1827. The Viennese, who had been neglecting him during the last few years, because of the Rossini furore (in 1823 no operas but Rossini's were sung in Vienna, and the whole musical atmosphere was affected by them), now realized their loss and a crowd of 20,000 persons attended the funeral. He was buried in the Währinger Friedhof, but in 1888 his remains were transferred, with those of Schubert, to the Central Cemetery. Statues of him were erected at Bonn in 1845, in Vienna in 1880, in Brooklyn in 1894, at Leipzig (Max Klinger) in 1902. In 1815 the freedom of the city of Vienna had been conferred upon him.

A certain wildness was given to Beethoven's appearance by his long, abundant hair, which was always in a state of disorder. He was strongly built and muscular, but below medium stature, his height being five feet five inches. His small black eyes were bright and piercing, his forehead broad and high, his complexion ruddy. His friend Schindler wrote that when a musical idea took possession of his mind, "there was an air of inspiration and dignity in his aspect; and his diminutive figure seemed to tower to the gigantic proportions of his mind." Already in Bonn his friends used to note the occasions when he was "in his *raptus*." These moments of inspiration would come to him at any time and anywhere — in his room, in the streets of Vienna, and particularly in the country. He was extremely found of nature and country life, and spent his summers in the picturesque regions near Vienna. A sketch book was always in his pocket, and into this he jotted his ideas as they came. Afterward he revised and re-revised these sketches. "There is hardly a bar in his music," says Grove, "of which it may not be said with confidence that it has been rewritten a dozen times. Of the air 'O Hoffnung,' in 'Fidelio,' the sketch books show 18 attempts, and of the concluding chorus 10." These sketches have been collected by Nottebohm and printed; they give an interesting and instructive insight into the workshop of genius. Another curious fact regarding his creative power is that, like Wagner's, it matured slowly. Mendelssohn wrote his best piece, the 'Midsummer Night's Dream' overture at the age of 17; Schubert was 18 when he wrote his wonderful 'Erlking;' but Wagner was 28 when he wrote his first really original opera ('The Flying Dutchman'), and Beethoven 29 when he composed his first symphony, and that might have been almost as well written by Mozart or Haydn.

It is customary to divide Beethoven's compositions into three groups, following the suggestions of a Russian, W. von Lenz, who, in 1852, issued a book entitled 'Beethoven et ses trois styles.' The first group in which the influence of his predecessors is still more or less obvious includes, among many other things, the first two symphonies, the septet, the first six string quartets, the aria 'Ah Perfido,' the song 'Adelaide,' etc.; the second, which shows Beethoven in the full vigor of his manhood, originality and creative power, begins after the year 1800, and includes six symphonies, from the third (Eroica) to the eighth, the opera 'Fidelio,' the violin concerto, the Coriolan overture, the Egmont music, the Rasumovsky quartets, the Kreutzer sonata, the 'cello sonata in A, 14 sonatas for pianoforte, etc.; the third, which begins after a period of great tribulation and depression in his life, includes the last five pianoforte sonatas, the string quartets op. 127, 130, 131, 132, 135, the 'Missa solemnis,' the ninth symphony, the 'Ruins of Athens,' etc. Concerning some, at least, of the works of this third period opinion is still divided. There are critics who think that, partly in consequence of his deafness, Beethoven had become garrulous, incoherent and vague, whereas others profess to find in the compositions of this period the highest summit of all musical creativeness.

A better way than Lenz's of considering the achievements of Beethoven's genius is to cast a glance at each class of his compositions by itself. The eminent English critic, Dr. Hueffer, wrote that "Beethoven is in music what Shakespeare is in poetry, a name before the greatness of which all other names, however

great, seem to dwindle." This is an exaggeration. There is, in reality, only one department of music — the symphony — in which Beethoven is incontestably pre-eminent; in all the others he has his equals, and in some his superiors. In the Lied, or art-song, he is far inferior to Schubert and half a dozen other masters; in the grandeur of choral writing he never equalled Bach and Handel; his 'Fidelio' is not equal to the best operas of Mozart, Weber, Wagner, Gounod, Bizet and Verdi; his pianoforte compositions are harmonically less fascinating, and less idiomatic in style, than Chopin's and Schumann's, and in the realm of chamber music there are works of Haydn, Mozart, Brahms, and particularly Schubert and Schumann, quite equal to the best of Beethoven's. His weakest works are in the department of vocal music, especially the Lied. He once said to Rochlitz: "Songs I do not like to write." He looked on them as bagatelles into which it was hardly worth while to put his best ideas. Hence, among his songs, there are only a few which show his genius to advantage. The best of them are 'Adelaide,' 'Die Ehre Gottes,' and 'In questa tomba.' (Consult Finck's, 'Songs and Song Writers,' pp. 28–34). One of the most judicial biographers, Wasielewski, remarks: "While Beethoven wrote a good deal for the voice, he cannot be considered a vocal composer in the proper sense of the word. Full appreciation of the real nature of the human voice, the subtle knowledge of its resources which we admire in Handel and Mozart, he did not possess. His realm was instrumental music." Nevertheless, there is much that is of great beauty in his vocal works, which include the opera 'Fidelio,' the oratorio 'Christus am Oelberg,' two masses, a sonata, 66 songs with pianoforte, 18 canons, 7 books of English, Scotch, Irish, Welsh and Italian songs with pianoforte, violin and 'cello, etc. He himself considered his second mass — 'Missa solemnis' — his most successful work, but the musical world is much more enamored of his 'Fidelio,' which, while conventional in the first act, rises in the second to such a sublime level of dramatic expressiveness that it is to be much regretted he never found time to execute his other operatic plans, which included a Macbeth, a Faust and an Alexander. The history of 'Fidelio' and its four overtures is of particular interest, but the limits of space forbid its insertion.

For pianoforte there are 38 sonatas, 5 concertos, 21 sets of variations, and more than 50 short pieces — bagatelles, rondos, preludes, ländlers, etc. Hans von Bülow spoke of Bach's 'Well-Tempered Clavichord' as the Old Testament of music and Beethoven's sonatas as the New, "in both of which we must believe;" and he declared that the mere technical mastery of these sonatas is "the task of half a life-time." They mark a tremendous advance over all his predecessors excepting Bach. In wealth of melodic ideas and rhythmic variety, as well as in structural finish, and especially in emotional expressiveness, they far surpass all previous works of their kind; yet it was not till several decades after the composer's death that they began to be generally appreciated and played in public. The pendulum then swung to the opposite extreme, and every Beethoven sonata was supposed to be a peerless masterwork which is far from being true. (Read the admirable comments on all these works in chap. VII of J. S. Shedlock's 'The Pianoforte Sonata'). In the matter of form Beethoven was by no means the pedant many of his admirers would have him. The orthodox sonata is supposed to consist of four movements; but of his 38 sonatas only 15 have four movements; 11 have 3, and 6 have only 2; moreover, his two-movement sonatas are by no means "torsos," as some have foolishly called them; they include op. 90 and op. 111, two of his very best works, the op. 111 being, in fact, his last word on the subject.

The chamber music includes 8 trios for piano and 'cello; 5 trios, 16 quartets and 2 quintets for strings; 10 sonatas for piano with violin, 5 with 'cello, 1 with horn, 3 sextets and 1 septet for string and wind instruments; 2 octets for wind. The quartets have been made tolerably familiar, but among the other works here referred to there are many gems of which the public is still unaware. But it is when we come to the orchestral works — the 11 overtures, and 9 symphonies — that we see Beethoven in his real grandeur. Of these works Richard Wagner, who worshipped Beethoven, has written most eloquently (see index to vol. I of Glasenapp's 'Wagner Encyclopädie,' or to Ellis's translation of Wagner's prose works; Grove's 'Beethoven's Nine Symphonies' gives an excellent analysis for amateurs). Concerning the symphonic works, Wagner wrote: "He developed the symphony to such a fascinating fullness of form and filled this form with such an unheard-of wealth of enchanting melody, that we stand to-day before the Beethoven symphony as before the boundary line of an entirely new epoch in the history of art; for with them a phenomenon has appeared in the world, with which the art of no time and no nation has had anything to compare even remotely." It is not only that Beethoven's symphonies are longer than those of Haydn and Mozart, or broader and richer in melody, more varied in rhythm, and fuller in minute details of elaboration; what particularly distinguishes them is their greater emotionality and more powerful contrasts of moods. On the one side we have (as in the pianoforte sonatas) those soulful, tearful adagios which are a specialty of Beethoven; on the other the humorous scherzo, which he put in place of the dainty, graceful minuet of his predecessors. This symphonic scherzo was really a new thing in music, for while there is much fun in Haydn, it is of a much lighter quality. In Beethoven's there are elements of grimness and the grotesque; with an undercurrent of melancholy, as in the scherzos of Chopin. In the art of dyeing the music in deeper and more varied orchestral colors Beethoven's symphonies and overtures also mark a great advance over his predecessors.

While Beethoven stands at the head of composers of the classical school, an almost equal claim to distinction lies in this that in his works are to be found many of the germs which Weber, Schubert, Mendelssohn, Schumann and others developed into the German romantic school. Among these germs are his inclination to shatter the sonata form (particularly in the last movement of the ninth symphony, which is epoch-making in its bold unconventionality); his disposition to allow his ideas to shape the

form in which they are to be uttered; the subjective expressiveness of his music, which has five times as many expression marks as Mozart's; the use of characteristic (realistic) orchestral colors; his way of playing the pianoforte and conducting an orchestra, with tempo rubato, or frequent modification of pace; and above all, his sanctioning of program music by his 'Pastoral Symphony,' which illustrates episodes in the country — a scene at a brook, the merrymaking of peasants, the song of birds and a thunderstorm. It is also significant of his romantic inclinations that toward the end of his life he conceived a plan of giving poetic titles to all his sonatas and even to the separate movements. The 'Moonlight sonata,' it is well to remember, did not get its inappropriate name from him.

**Bibliography.**— Several books have already been referred to. Of the biographies the best was written in English by the American A. W. Thayer and published, in a German version only (Vols. I–III, Berlin 1866–77; Vols. IV, V, Leipzig 1907–08). Thayer also furnished a useful 'Chronologisches Verzeichniss' of Beethoven's works, of which a complete edition was printed by Breitkopf and Härtel in 1864–67. Another important work in this connection is G. Nottebohm's, 'Thematisches Verzeichniss der Werke Beethovens' (Leipzig 1913). Consult also Bekker, P., Beethoven' (Berlin 1911); Kalischer, A. C., 'Beethoven und seine Zeitgenossen' (4 vols., Leipzig 1910); Kerst, F., 'Beethoven im eignen Wort' (Berlin 1904; English trans. by Henry E. Krehbiel, New York 1905); Nohl, L., 'Beethoven's Leben' (3 vols., Berlin 1867; revised by P. Sakolowski, Berlin 1912); Schindler, A., 'Biographie von Ludwig van Beethoven' (Münster 1840); Marx, A. B., 'Ludwig van Beethoven, Leben und Schaffen' (2 vols., Berlin 1884); Wegeler, F. G., and Ries, F., 'Biographische Notizen über Ludwig van Beethoven' (Coblentz 1838; reprinted by A. C. Kalischer, Leipzig 1906). For analyses of his sonatas and symphonies consult Grove, G., 'Beethoven and his Nine Symphonies' (London 1896); Helm, Th., 'Beethoven's Streichquartette' (Leipzig 1910); Lenz, W., 'Beethoven et ses trois styles' (2 vols., Paris 1855; new edition by D. Calvocoressi, Paris 1909); Nesieht, R., 'Das goldene Zeitalter der Klaviersonate' (Cologne 1910); Reinecke, C., 'Die Beethovenschen Klaviersonaten' (Leipzig 1897; English trans., London 1898); Nagel, W., Beethoven und seine Klaviersonaten' (2 vols., Langensalza 1904). For Beethoven's correspondence consult the selections by Leichtentritt, H. (Berlin 1912); Leitzmann, A. (Leipzig 1909); Sachs, C. (Berlin 1909); Thomas-San-Galli, W. A. (Halle 1910) and Kalischer, A. C., 'Beethoven's sämmtliche Briefe' (5 vols., Berlin 1908; English trans. by J. S. Shedlock, London 1909) and Prelinger, F., 'L. van Beethoven's sämmtliche Briefe und Aufzeichnungen' (4 vols., Vienna 1908). A yearbook entitled *Beethoven Forschung* has been issued at Vienna since 1911.

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**BEETLE**, an insect of the order *Coleoptera*. Beetles are distinguished from all other insects by the elytra or thickened fore wings, which are not actively used in flight, the hind wings being especially adapted for that purpose. The elytra cover and encase, thus protecting, the posterior segments of the thorax and the abdomen. The prothoracic segment is greatly enlarged, often exarated in front, to receive the head. These characters are very persistent. There are few aberrant forms and the order is remarkably homogeneous and easily limited. The head is free from the thorax; it is scarcely narrowed behind, and its position is usually horizontal. The eyes are usually quite large, and there may be one or two ocelli — not more. The antennæ are usually inserted just in front of the eyes, and rarely between them. They are either filiform where the joints are cylindrical, as in the ground beetles (*Carabidæ*), not enlarging toward the end, or serrate, as in the *Elateridæ*, where the joints are triangular and compressed, giving thereby a serrate outline to the inner edge; or clavate as in the *Silphidæ*, where the enlarged terminal joints give a rounded, club-shaped termination; or lamellate, when the terminal joints are prolonged internally, forming broad, leaf-like expansions, as in the *Scarabæidæ*, while the geniculate antenna is produced when the second and succeeding joints make an angle with the first. The mandibles are always well developed as biting and chewing organs, becoming abnormally enlarged in the stag-beetles (*Lucanus*), while in certain *Scarabæidæ* they are small and membranous. The maxillæ prepare the food to be crushed by the mandibles. The greatly enlarged prothorax is free and movable.

In the running species, as *carabidæ*, the hind wings being useless are aborted, and very rarely in some tropical *Lampyridæ* and *Scarabæidæ* both pairs of wings are wanting in both sexes, though, as in the glow-worm and some of its allies, the females are apterous. The legs are well developed, as the beetles are among the most powerful running insects, the hindermost pair of legs becoming oar-like in the swimming *Dytiscidæ* and some *Hydrophilidæ*, while in the *Gyrinidæ* both pairs of hind legs become broad and flat. The number of tarsal joints varies from the normal number five, to four and three joints, the terminal joint as usual being two-clawed. These claws are known to be wanting only in *Phanæus*, a scarabæid, and the aberrant family, *Stylopidæ*. According to the number of the tarsal joints the families of the *Coleoptera* have been grouped into the *Pentamera* (five-jointed), the *Tetramera* (four-jointed), the *Trimera* (three-jointed), and the *Heteromera*, which are four-jointed in the hind pair, while the first and second pairs are five-jointed. The abdomen, usually partially concealed by the wings, is sessile, its base broad; in form it is usually somewhat flattened.

A few genera are capable of producing sounds by rubbing the limbs or elytra over finely wrinkled surfaces, which in *Trox* are situated on the side of the basal segments of the abdomen, and in *Strategus* on the tergum of the penultimate segment of the abdomen, while such a surface is found in *Higyrus* on the surface of the elytra.

The larvæ when active and not permanently enclosed (like the curculio) in the substances that form their food, are elongated, flattened, wormlike, with a large head, well-developed

mouth-parts and three pairs of thoracic feet, either horny, or fleshy and retractile, while there is often a single terminal prop-leg on the terminal segment of the body and a lateral horny spine. The wood-boring larvæ of the *Cerambycidæ* are white, soft and more or less cylindrical, while those of the *Curculionidæ* are footless or nearly so, and resemble those of the gall-flies, both the hymenopterous and the dipterous.

The pupæ have free limbs, and are either enclosed in cocoons of earth, or, if wood-borers, in rude cocoons of fine chips and dust, united by threads, or a viscid matter supplied by the insect. None are known to be coarctate, though some *Coccinellæ* transform within the old larva-skin, not rejecting it, as is usual in the group, while other pupæ are enclosed in the cases in which the larva lived. In some *Staphylinidæ* the pupa shows a tendency to become obtected, the limbs being soldered to the body, as if enclosed in a common sheath. Generally, however, the antennæ are folded on each side of the clypeus, and the mandibles, maxillæ and labial palpi appear as elongated papillæ. The wing-pads being small are shaped like those of the adult *Meloe*, and are laid upon the posterior femora, thus exposing the meso- and meta-thorax to view. The tarsal joints lie parallel on each side of the middle line of the body, the hinder pair not reaching to the tips of the abdomen, which ends in a pair of acute, prolonged, forked, incurved horny hooks, which must aid the pupa in working its way to the surface when about to transform into the beetle.

The number of known living species is between 100,000 and 200,000, and over 10,000 species are known to inhabit the United States. About 1,000 fossil species are known.

Coleoptera have been the favorites of entomologists. They have been studied when in their perfect state more than any other insects, but owing to the difficulty of finding their larvæ and carrying them through the successive stages of growth, the early stages of comparatively few species are known. The metamorphoses are complete, and in this respect the beetles are much in advance of the orders of net-veined insects in which the transformations are incomplete. Many beetles, as the species of *Cetonia*, etc., visit flowers to collect and eat the pollen, and in doing so bring about the fertilization of those flowers.

**Classification.**— The systematic arrangement of the *Coleoptera* is in an unsettled state. The tiger and ground beetles are generally considered to be the "highest" *Coleoptera*, but in reality they appeared to be allied to what were the more primitive and generalized types, while what are by some authors regarded as the "lowest" beetles, that is, the weevils, are the most specialized or most highly modified. As all our classifications begin with the more primitive or earliest forms, and end with the most specialized, we should begin with the *Carabidæ* or ground beetles, as being the nearest representatives of what are supposed to be the earliest beetles. We would, therefore, adopt provisionally Sharp's primary divisions of *Coleoptera*, with some important changes. His first division of series comprises the lamellicorns (May beetle, etc.), and his second the *Adelphaga* or ground beetles. This order should be reversed.

Series 1. *Adelphaga* (*Carabidæ* of some authors). Antennæ long, slender, filiform; tarsi five-jointed; maxillæ highly developed, three-lobed, the outer palpus shaped. (Ground and tiger beetles).

Series 2. *Lamellicornia.* Antennæ short, the terminal joints leaf-like; tarsi five-jointed.

Series 3. *Polymorpha.* Antennæ either club-like or serrated, variable in shape, as are the number of joints of the tarsus. (*Buprestidæ*, spring-beetles, etc., including many families).

Series 4. *Heteromera.* Front and middle tarsi five-jointed, hind tarsi four-jointed; other characters very variable. *Tenebrionidæ, Cantharidæ*, or blister-beetles (q.v.), etc.

Series 5. *Phytophaga.* Tarsi four-jointed but with a small additional joint at the base of the fourth joint; sole usually densely pubescent. (Boring or longicorn beetles; *Cerambycidæ*, leaf-beetle, potato beetle).

Series 6. *Rhyncophora.* (Weevils). Head prolonged in front to form a beak; palpi much reduced; tarsi four-jointed, but with an additional minute joint at the end of the fourth. The term *Isomera* was applied by Le Conte and Horn to a combination of series 1, 2, 3 and 5.

**Phylogeny.**— The *Coleoptera* are supposed by Braver and also Packard to have descended from some type allied to a *Campodea*-like ancestor. The larvæ of the ground beetles are allied by their long legs and biting mouth-parts to the common *Campodea*-like progenitor; they appear to have undergone the least modification from the shape of the primitive coleopterous larva; the footless grubs of boring beetles, longicorns and weevils, being secondary forms. Thus the *Coratidæ* and next after them the rose-beetles (*Staphylinidæ*) have been regarded as the nearest to the earliest type of beetles.

**Fossil Beetles.**— The earliest known remains of Coleoptera are five specimens from the carboniferous strata of Silesia, of which four are wing covers and one is a pronotum; these have been referred by Karsch to the families *Carabidæ* or *Tenebrionidæ*. In the lower Jurassic, however, comparatively well-preserved remains of six families (*Carabidæ, Dytiscidæ, Elateridæ, Scarabæidæ, Ceramoycidæ* and *Chrysomelidæ*) have been detected, showing that, early in the Mesozoic era, nearly all the principal types of beetles had appeared; whence we naturally suppose that their ancestors evolved during the Carboniferous period, though their remains have not yet been discovered. During the Tertiary age beetles became more abundant, and a greater number of species belonging to existing genera have been found. The Oligocene fresh-water deposits of Aix and Provence, of Florissant, Colo., contain many kinds of beetles, as also do the Miocene amber of the Baltic coast in Prussia and the lignite of Bohemia, as well as the fresh-water marls of Germany, Utah and Wyoming. Of the weevils 350 Tertiary species have been described, their hard bodies accounting for their preservation.

**Bibliography.**—The writings of Say, Harris and others; especially Le Conte and Horn; 'Rhynchophora of America north of Mexico,' 'Classification of the Coleoptera of North America.'

**BEETLEHEAD.** See BLACK-BELLIED PLOVER.

**BEETS,** bāts, **Nicolaus,** Dutch poet and writer: b. Haarlem, 13 Sept. 1814; d. 1903. He studied theology at Leyden, and after serving at Heemstede near Haarlem he was in 1854 appointed to the pastorate of Utrecht and in 1874 to the chair of theology there. His poetical works were collected (4 vols., 1873–81). Through the earlier pieces runs a strong vein of misanthropic sentiment due probably to Byron, some of whose works he translated into Dutch (2 vols., 1835–37). His prose writings include 'Camera Obscura' (13th ed., 1880), a series of tales and sketches of life and scenery in Holland, published under the pseudonym of HILDEBRAND; they display keen observation and considerable humor. Besides several critical works, he published in theology notes on the life of Saint Paul (3d ed., 1858), and 'Stichtelijke Uren' (new ed., 8 vols., 1872).

**BEEVILLE,** Tex., town and county-seat of Bee County, 90 miles southeast of San Antonio, on the San Antonio & Aransas Pass, and the Galveston, Harrisburg & San Antonio railroads. The region is well suited to fruit and vegetable cultivation and cotton, honey and live stock are exported in large quantities. The town has a cottonseed-oil mill and a broom factory. In 1912 the commission form of government was adopted. Pop. 3,269.

**BEFANA,** bā-fā'na (Italian, *Befania,* «*Epiphany*»), a figure, generally representing an old woman, which is exhibited in Italy on the day of Epiphany by children, or in shops, etc., where things for children are sold. It symbolizes the ancient woman of Palestine who, saying she would see them on their return, would not leave her household duties to view the Three Kings of the Orient passing on their way to bear their rich offerings to the infant Jesus. Unknown to Befana, they returned in a different direction, and she is supposed to be still fruitlessly waiting for them. Her influence watches over little children who, on the eve of Epiphany, hang their stockings before the hearth-fire, go to bed early and wait to hear the cry «Ecco la Befana,» when up they jump to find the presents awarded for good behavior during the past 12 months. A stockingful of ashes is the award for bad behavior. The parallel custom in the United States, Great Britain, Germany and Protestant communities generally is obviously the visit of Santa Claus on Christmas Eve. In France the children's «étrennes» or gifts are distributed on New Year's Eve; in Russia on Twelfth Night, which is also the eve of Epiphany. (See NICHOLAS, SAINT, OF MYRA). Among the Hebrews at Hannukah or Channukah, the Festival and Dedication of Lights (John x, 22), celebrated 25 December, money is given the children and gifts are exchanged. At Purim — the Feast of Esther (15 Adar — March), a festival of mirth, rejoicing and masquerading, «salachmonnes,» a dish of sweetmeats including «humuntash»— a sweet three-cornered seed cake, is sent to the homes and friends and relatives by the hands of servants or children, who generally receive «tips.» The poor also during this festival are the recipients of generous charity. At the Passover (14 Nisan — April), which includes the Fast of the First-Born and the Festival of Unleavened Bread, a piece of «mazzoth» or unleavened bread is hidden which it is the privilege of the youngest child to seek. When discovered, the finder can ask any favor or gift from the parent, which is granted.

**BEG,** or **BEY,** bā, a title of honor among the Turks, meaning «lord.» Beg is an inferior title to pasha.

**BEGARELLI,** bā-gä-rĕl'lē, **Antonio,** Italian designer, styled ANTONIO OF MODENA: b. Modena about 1498; d. 1565. By his contemporaries he was considered the greatest designer of his day. He was a friend of Correggio and co-operated with him in decorating the cathedral of Parma, furnishing many of the designs and models for the artist's pictures. His groups were commonly of life size or heroic, and were greatly admired by Michelangelo. He influenced strongly the succeeding Lombard artists in the matter of design. His 'Descent from the Cross,' the most significant of his remaining works, still adorns the church of San Francesco at Modena.

**BEGAS,** bā'gas, **Karl,** Prussian painter: b. Heinsberg, near Aix-la-Chapelle, 30 April 1794; d. Berlin, 23 Nov. 1854. He studied first under Philippart, and in Paris under Gros. His first work, a copy of the Madonna della Sedia, attracted the attention of the King of Prussia, who appointed him painter of the Prussian court. His productions comprise historical, genre and portrait paintings, of which the most important are 'Henry IV at the Castle of Canossa'; the 'Sermon on the Mount'; 'Christ on the Mount of Olives'; the 'Lorelei'; and the portraits of Humboldt, Schelling, Ritter, Rauch, Cornelius and Meyerbeer. He was a member of the Berlin Academy of Fine Arts.

**BEGAS, Karl,** German sculptor (son of the preceding): b. 1845. He studied in the studio of his brother Reinhold and at the Berlin Academy of Art. Among his most important works are the Franco-Prussian memorial unveiled at Cassel in 1898; the groups in the Berlin «Siegesallee,» of Margrave Otho IV and Frederick William; the statue of Knobelsdorf in the Berlin Museum; those of Columbus and Aristotle in the University of Kiel; of Emperor Wilhelm II in the Hall of Fame at Barmen; and of Empress Auguste Victoria at Urville.

**BEGAS, Oskar,** German artist (eldest son of Karl Begas (q.v.)): b. Berlin, 31 July 1828; d. there, 10 Nov. 1883. He received his first tuition in painting from his father, and at the age of 12 could already paint good portraits. In 1852 he won a scholarship at painting, which enabled him to continue his studies in Italy for two years, after which he visited France and England for a period. While in Rome he gained a gold medal with his 'Deposition from the Cross,' a life-size canvas, and also the title of official painter in the Prussian Academy. Among his best portraits are those of Peter von Cornelius (in the Antwerp Museum, 1861), Pauline Lucca, Crown Prince Frederick, General von Moltke (1868) and William I. Of his historical paintings the best is 'The Hour of Gossip' (National Gallery, Berlin). He also painted some of the mural decorations in the Berlin Rathaus (1870).

**BEGAS, Reinhold,** German sculptor (son of Karl Begas and brother of Oskar Begas,

qq.v.): b. Berlin, 16 July 1831; d. 3 Aug. 1911. It is generally conceded that he was the leading German sculptor of his own period. Beginning his studies in the Berlin Academy, he later studied under Wichmann and Rauch. Earning a scholarship from the Berlin Academy through a group he had executed, he went to Rome to finish his training. In 1860, after his return, he was appointed professor of the art school at Weimar, but two years later returned to Rome. As is shown in his later work, while in Rome Begas was strongly influenced by the realism of the Baroque School. His 'Pan Consoling a Deserted Nymph' (1857) was one of the first of his works which showed his tendency toward the portrayal of a live vigor in the cold stone, and it made an immediate impression on his countrymen, who were growing tired of the softer contours of the classical school. Only two years after this he was commissioned to execute a group surmounting the Berlin Bourse, which was soon followed by the monument to Frederick William III at Cologne; the Schiller monument in Berlin (1871); and the Strousberg sepulchral monument (1874) which won the Grand Prize at the Paris Exposition in 1900. This was the early period of his career, during which he also modelled the busts of many of the German royalties and high officials, including a whole series of the Hohenzollern family. By this time he had been placed in charge of the portrait sculptures of the Berlin arsenal and its Hall of Fame. He was at this time the official sculptor of the Prussian court. Among his other notable works performed during this period are the bronze group "Germania," on the Reichstag building; the marble sarcophagus of Frederick II erected in the mausoleum at Potsdam and the colossal "Fountain of Neptune" (1886), surrounded by allegorical figures of the rivers and sea monsters. By many this latter is considered his masterpiece.

In 1892 Emperor William II, without the formality of an official competition, commissioned Begas to execute the national monument to William I, and another to Bismarck (1901) in front of the Reichstag building. These were followed by a marble statue of the Emperor himself in the palace at Potsdam (1904). But in general the works which he performed toward the end of the first and in the beginning of his second periods are considered his best.

**BEGBIE, Harold,** English author: b. Fornham Saint Martin, Suffolk in 1871. His education was obtained entirely from private tutors and in private schools, at the conclusion of which he immediately embarked on a literary career. His books are largely novels, with a strong didactic tendency. Among his more important works are 'The Political Struwwelpeter Series' (1889–1901); 'The Handy Man' (1900); 'The Fall of the Curtain' (1901); 'Master Workers' (1905); 'The Priest' (1906); 'The Cage' (1909); 'Broken Earthenware' (1909, published in America under the title 'Twice Born Men,' 1910); 'Souls in Action' (1911); 'The Ordinary [illegible] the Extraordinary Thing' (1912); [illegible]ep' (1912); 'Rising Dawn' ([illegible]Proof God' [illegible]; 'The Queen' [illegible]

**GBIE, Sir** [illegible]**lie,** British [illegible]l judge: b. [illegible]cotland, 1819; d. 1894. He was educated at Cambridge and called to the English bar in 1844. He was appointed judge in the colony of British Columbia in 1858; and was chief justice of British Columbia, 1870–94.

**BEGG, Alexander,** Canadian author: b. Quebec, 19 July 1840; d. 1898. He was educated in Aberdeen, Scotland, and in Saint John's, P. Q. He was the pioneer of Canadian trade (1867) in Manitoba and in the Northwest Territories. During the rebellion of 1869 he advocated representative government for the people. In 1878–84 he was deputy treasurer of the province of Manitoba. His works include 'Dot it Down'; 'The Creation of Manitoba'; 'A Story of the Saskatchewan'; 'A Practical Guide to Manitoba'; 'Ten Years in Winnipeg'; 'A History of the Northwest' (3 vols.), etc.

**BEGGAR-MY-NEIGHBOR,** a game at cards, usually played by two persons, who share the pack, and, laying their shares face downward, turn up a card alternately until an honor appears. The honor has to be paid for by the less fortunate player at the rate of four cards for an ace, three for a king, two for a queen and one for a knave; but if in the course of payment another honor should be turned up, the late creditor becomes himself a debtor to the amount of its value.

**BEGGAR-TICK,** a troublesome weed. See BURR MARIGOLD.

**BEGGARS,** a term first applied to the 300 Protestant deputies under Henri de Brederode and Louis de Nassau, who protested against the establishment of the Inquisition in Holland in April 1566. The Dutch patriots assumed this designation when they rebelled against Spain in 1572.

**BEGGAR'S LICE,** a coarse weed also called Dog's Tongue.

**BEGGAR'S OPERA, The,** a play by John Gay, which first presented in 1728, excited a "tempest of laughter." Its object was to satirize the predatory habits of "polite" society in thief-infested London, and to hold up to ridicule Italian opera. The chief characters are thieves and bandits. Gay's language often conforms to the coarse taste and low standards of his time; and the opera, still occasionally sung, now appears in expurgated form. Its best-known number is Macheath's famous song when two of his inamoratas beset him at once:

> "How happy could I be with either
> Were t'other dear charmer away!"

has become a popular quotation.

Captain Macheath, the hero, the leader of a gang of highwaymen, is loved by the ladies and feared by all but his friends — with whom he shares his booty. Peachum, the "respectable" patron of the gang, and the receiver of stolen goods, betrays his confederates from self-interest. Macheath is married to Polly Peachum, a pretty girl, who really loves her husband, and remains constant under many vicissitudes. Macheath engages to marry others, but this gets him into trouble. Being betrayed, he is lodged in Newgate. His escape, recapture, trial, condemnation to death, and reprieve, form the leading episodes in his dashing career. After his reprieve he makes tardy acknowledgment of Polly, and promises to re-

main constant to her for the future. Polly is an interesting dramatic character; at least three actresses attained matrimonial peerages through artistic interpretation of the part.

**BEGGARWEED,** or **TICK TREFOIL** (*Meibomia*), a genus of about 170 species, mostly herbs, of the family *Fabaceæ*, natives of warm and temperate climates. Some of the species, notably the Florida beggarweed (*M. tortuosa*), are used in Florida and elsewhere as fodder plants and as green manures on light soils. Like the clovers these plants can assimilate free nitrogen from the air. The species mentioned yields heavy crops of highly nutritive hay which is relished by stock. At the Louisiana Experiment Station six tons of hay per acre is reported. The plant is an annual from three to 10 feet tall, has pinnate leaves, small flowers in racemes, and flat, jointed pods which adhere to clothing and animals by their hooked hairs. The plant has been found to do well in the West Indies and as far north as Virginia. About 10 native species worthy a place in the flower-garden have been offered for sale by dealers in native plants, but not generally by seedsmen. *M. gyrans*, the telegraph plant, a purple flower perennial, native of southern Asia, is sometimes raised in hothouses on account of the interesting movements of its leaflets when exposed to favorable temperature and sunshine.

**BEGGIATOA,** one of the bacteria of the family *Beggiatoaceæ*. They are of sanitary interest as indicating the character of the water in which they grow,—it usually contains sulphur,—and their presence in large quantities in a water supply is usually held to mean that the water is contaminated and should be investigated. Their growth in natural sulphur waters is to be expected.

**BEGGING THE QUESTION,** in logic, is the assumption of a proposition which in reality involves the conclusion. Thus, to say that parallel lines will never meet because they are parallel is simply to assume as a fact the very thing you profess to prove. The phrase is a translation of the Latin term, *petitio principii*, and was first used by Aristotle.

**BEGHARDS,** societies of laymen in France, Germany and the Netherlands, first appeared in the 13th century, subsisting mostly by begging, and little esteemed. They disappeared in the latter part of the 14th century. Their history is very obscure.

**BÉGIN,** bā-ghăń, **Louis Nazaire,** Canadian cardinal: b. Levis, 10 Jan. 1840; educated at the College of Saint Michael de Bellechasse, the Seminary of Quebec, Laval University and the Grand Seminary of Quebec. About the time of his graduation from the last institution its trustees decided to found a theological department in connection with Laval University, and it was their wish that the faculty of this theological school should be educated in Rome. Therefore Dr. Bégin, who had been elected a member of the faculty, was sent to Rome in 1863, and remained abroad till 1868. During this time he traveled extensively and studied many branches of theology. On his return to Quebec he was appointed professor of dogmatic theology and ecclesiastical history in Laval University and held the chair till 1884. He became principal of the Laval Normal School in 1885; was appointed bishop of Chicoutimi in 1888; coadjutor to Cardinal Taschereau, with the title of archbishop of Cyrene, in 1891; in 1894 became administrator of the province of Quebec; and in 1898 archbishop. He was elected to the cardinalate in 1914. His works include 'La Primauté et l'Infaillibilité des Souverains Pontifs,' 'La Sainte Ecriture et la régle de foi' (1874); 'Le culte Catholique' (1875); 'Catéchisme de controverse' (1902), etc.

**BEGLERBEG,** bā-lĕr-bā', or more accurately BEYLERBEGI, ba-lĕr ba'ē, "prince of princes," or "lord of lords," is the title among the Turks given to the governor of certain provinces, but is not very commonly employed at the present day. The governors of Rumili, of Anatolia and of Syria, in particular, have this title. See BEG.

**BEGON, Michel,** bė-gŏń, mē-shĕl, French administrator: b. Blois, France, 1638; d. Rochefort, 4 March 1710. He was a naval officer, and successively intendant of the French West Indies, of Canada, of Rochefort and La Rochelle. He is celebrated for his love of science, and the well-known genus of plants, *Begonia*, was named in his honor.

**BÉGON, Michel,** French administrator: b. 1674; d. 1740. He was from 1707–10 inspector-general of marines in France; intendant in Canada 1710–26; and subsequently intendant of justice in Normandy.

**BEGONIA,** a genus of 400 to 500 species of succulent tropical herbs or under-shrubs of the family *Begoniaceæ*, most abundant in Mexico and Central and South America. Since the introduction of the first species (*B. nitida*) into England in 1777 about 200 species have been utilized by horticulturists, who have produced thousands of varieties noted for the superb coloring of either or both their flowers or foliage. In general the plants are characterized by variable, lop-sided (except in one group), alternate, entire or lobed leaves; axillary cymes of usually large monœcious flowers, varying in all shades of red, also white and yellow; numerous stamens free or basally united; two to four styles; branched or twisted stigmas; and three-winged capsular, often colored, fruits containing numerous tiny seeds. The cultivated varieties may be grouped into (1) summer-flowering or tuberous-rooted, which produce large single and double flowers; (2) winter-flowering or fibrous-rooted; (3) semi-tuberous, with peltate leaves; (4) ornamental-leaved, or rex, Asiatic species and their descendants, with remarkably handsome or striking foliage. There are also hybrids between members of these groups. Each group demands somewhat different cultural treatment, but in general the tuberous sorts are started from seeds, and the tubers thereafter used from year to year; other varieties are usually increased by means of cuttings, either of stem or of the leaf, by various methods almost confined to this group of plants. The varieties are usually easy to cultivate, but some, especially the tuberous sorts, are somewhat sensitive to dryness of atmosphere and hot sun, which usually accounts for the poor behavior of these plants in houses heated by hot air, steam or hot water. For

description of species grown in America, and for details of propagation, cultivation, etc., consult Bailey, 'Standard Cyclopædia of Horticulture' (New York 1914). Consult also Drysander, 'The Genus Begonia' (in 'Transactions of the Linnean Society,' Vol. I, 1789); Klatsch, 'Begoniaceen-Gattungen und Arten' (12 plates, 1855); De Candolle, 'Prodomus' (Vol. XV, 1864); Ravenscroft, 'Begonia Culture for Amateurs' (1894); Wynne, 'Tuberous Begonias.'

**BEGUINAGES**, societies of women, called Beguines, in Holland, Belgium and Germany, not bound by vows; their mode of life, like that of the Beghards (q.v.), neither clerical nor lay. Their principal institution is at Ghent in Belgium.

**BÉGUINES**, beg-ēn', **BÉGUINS**, bĕg-ĭnz, or **BÉGUINÆ**, bĕg-wĭ-nē, the women who live in communities, the members of which dwell not in one household, as in convents, but in a group of small cottages surrounded by a wall, with a chapel in the centre. They vow poverty and chastity so long as they remain in the béguinage as their village is called. They are the associations of praying women which arose in the Netherlands in the 13th century, the first being formed at Nivelles, Brabant, in 1226, and spread rapidly in the adjoining countries. They said they originated from a certain Saint Begga, Duchess of Brabant, in the 7th century; but it is believed that they were founded by Lambert le Begue, a priest of Liége, in the 12th century. Mosheim rejects both statements. Communities were established in Mechlin in 1207, Louvain 1234, Bruges 1244 and Brussels 1245. They used to weave cloth, live together under a directress and leave on being married, or indeed whenever they pleased. During the religious convulsions of the 16th century, and later at the French Revolution, the communities — which had exercised considerable influence on the religious consciousness of the urban centres — were suppressed; but a few still exist in some of the Belgian towns, notably at Ghent, which has 1,000 members, also in Germany, and at least in one béguinage in France, where they are renowned as makers of lace, though under different rules from those formerly observed. The corresponding communities of men were called Béghards, but having developed heretical tendencies these were suppressed in 1650 by Pope Innocent X.

**BEGUM**, bā'gŭm, or **NAWAB** (a feminine form corresponding to beg, or bey), an Indian title of honor equivalent to princess, conferred on the mothers, sisters or wives of native rulers. The Begum of Oudh is well known in Indian history. The Begum of Bhopal is the regent in behalf of her son, a minor.

**BEHAIM**, bā'hīm, **Martin**, a famous cosmographer: b. Nüremberg about 1430; d. Fayal, 29 July 1506. He is distinguished as one of the most learned mathematicians and astronomers of his age. He was engaged in commerce, and traveled for the purpose of carrying on his business, from 1455 to 1479; but also devoted himself to the study of the mathematical and nautical sciences. He went from Antwerp to Lisbon in 1480, where he was received with marks of distinction. He sailed in the fleet of Diego Cam on a voyage of discovery (1484–86), and explored the islands on the coast of Africa as far as the river Zaire. He is also said to have discovered, or at least to have colonized, the island of Fayal, where he remained for several years, and assisted in the discovery of the other Azores. He was afterward knighted, and returned to his native country, where he constructed a terrestrial globe in 1492, which bears the marks of the imperfect acquaintance of that age with the true dimensions of the earth. Some ancient Spanish historians assert that he made many discoveries, and that he gave to his friend Columbus the idea of another hemisphere. Robertson (in his 'History of America') and others contradict this statement. It is also rejected by Irving.

**BEHAM**, bā'hām, **Barthel**, German painter and engraver: b. Nüremberg 1502; d. Rome 1540. He began his studies under the tuition of Albrecht Dürer and his brother Sebald (q.v.). On account of their revolutionary agitations he and his brother were banished from Nüremberg in 1525. He settled in Munich, where he became attached to the court of Duke William of Bavaria as official painter.

Many paintings that were formerly ascribed to Beham are now believed to have been painted by others. Yet there remains a large number which can with certainty be accredited to him. Among these are the portraits of Chancellor Eck (1527, Weber Collection, Hamburg); Count Palatine Otto Heinrich (1535, Augsburg Gallery); 'The Miracle of the Cross' (his masterpiece, 1530, Munich), and 17 portraits of Bavarian royal princes and dukes, in the palace of Schleisheim. Of his engravings nearly a hundred are still in existence. Consult A. Rosenberg's 'Sebald und Barthel Beham' (Leipzig 1875).

**BEHAM, Hans Sebald**, German painter and engraver: b. Nüremberg 1500; d. Frankfurt, 22 Nov. 1550. He was, for a time, at least, a pupil of Albrecht Dürer. In 1525 he and his brother Barthel (q.v.) were expelled from their native city on account of their socialistic doctrines and agitations. After a wandering life of some six years he settled in Frankfort, where he remained for the rest of his life. This marked the beginning of his serious work.

Many of his drawings are in existence and are found in the important German collections. Of all the engravers of his period, he was one of the most industrious, for the most recent catalogue of his works includes 1,074 woodcuts, 252 copper engravings and 18 etchings. His specialty was large wood-cuts designed for mural decorations. Of these the most notable are 'The Fountain of Youth,' 'The Military Pageant in Munich' and 'The Marching Soldiers.' Each of these is almost a yard in width. Of his many illustrations, the most famous are those which he designed for the publisher Egenolph in Frankfurt, illustrating the Old Testament (1533). At about that same time he painted the well-known table now in the Louvre.

**BEHAR AND ORISSA**, province in lower Bengal, British India. It was constituted in 1912 and includes the Behar, Choata-Nagpur,

Turhut, Patna and Orissa divisions and the districts of Purnea, Monghyr, Bhagalpur and the Sonthal Parganas in the Bhagalpur division. It is located in a square area between the Bay of Bengal and the Himalayas. In the north it is low and flat, bordering on the Ganges, while in the southwest rise the tablelands of Nagpur and Orissa. The principal crop is rice; this, together with sugar-cane, corn, indigo and the opium poppy plants, is grown in large quantities. The total area is some 120,000 square miles. In 1911 the population was about 40,000,000, more than the total population of the British Isles themselves. The capital is Patna.

**BEHAVIOR AND BEHAVIORISM.** The term behavior was used first to describe the conditions of animal activities, but because of the peculiar relations that exist between the actions of man and animals it has developed into a name for one general explanation of or attitude toward human and animal actions and psychological problems in general. The problem as to how the activities of men and of animals are related has been discussed from the beginning of thought. For the most part it was assumed that one could know directly the mind of man and that all that remained was to determine whether and to what degree animals had a similar mind. As there is no direct method of determining whether animals have mental states, the development of scientific analysis compelled the investigator to raise the more definite question of what the criteria of mental activities in animals might be. This again led away from the problem, since an unambiguous answer could not be given to the more general question of what different kinds of acts is the animal capable and what is the explanation of each.

One can trace the gradual development of the notion of behavior as a separate type of organic activity through three stages in the work of the last three decades. The first stage is represented by Loeb, whose experiments on animals led him to the conclusion that one must distinguish two types of control in the responses of animals. The lower animals respond as plants respond by heliotropism, geotropism, etc., a response that might very easily be reduced to simple mechanical laws, the contraction of the tissue on the side toward the light and its expansion on the opposite side, e.g., would explain positive heliotropism. The movements of higher animals were explained from the more human analogy as due to "associative memory," the simplest of the learning processes. Bethe a little later made an attempt to explain all actions of animals in purely mechanical and chemical terms. He asserted that movements similar to those of the amœba were made by drops of liquids and could be explained by the action of the surface film under different conditions. From experiments on ants he argued that they too were merely reflex machines, guided largely by the chemical excitations that we call odors. Jennings, in a long series of experiments, became convinced that there could be no sharp break in the line of development from lower to higher. In attempting to repeat Bethe's experiments he found that the reactions of the lowest organisms were by no means as simple as Bethe had assumed. Traces of learning, i.e., modification of responses as a result of earlier responses could be detected even in unicellular organisms. At the same time he believed nothing was to be gained by assuming consciousness as a cause. To all forms of action he applied the term "behavior."

Behavior, then, is a term that designates the activities of animals as wholes. It distinguishes their movements from the movements of inanimate objects, and at the same time does not make reference to consciousness or to any mental state. Behavior as the action of the whole is not referred to the action of the parts as in physiology. In this way it leaves room for an explanation of the organism's activity apart from physiology, although the behaviorist assumes that the laws of physiology must hold and be essential for the explanation of the animal's activity. Instead of analyzing the various acts into the mechanical action of the members, behavior is explained by reference to the natural endowment of the organism through instinct and particular heredity and to its earlier acts caused by forces in the environment. While originally developed as a negative term to show how animal movements were not to be explained, the term has gradually taken on a somewhat positive meaning to designate the explanation of these movements in terms of wider influences. This comes in part from the success of the psychologist and zoologist in determining the laws of behavior in animals. Within the last quarter of a century the laws of learning, certain of the instincts and the differential responses to stimuli have been pretty fully determined in many animals ranging from the amœba to the ape. These together give a fairly satisfactory explanation of behavior.

Behaviorism as a psychological and philosophical interpretation of man and mind grew naturally out of the concept of behavior in animals. If one may study the activities of the cat or the ape from the outside, and can by experiments determine the capacities of the animal and how it learns, discriminates between stimuli, and then can explain these capacities in terms of instinct and training, it is easy to take the next step in the assertion that the activities of man are also forms of behavior and can be examined and explained in the same way. They, too, may be treated merely as forms of response to definite stimuli. With that the traditional attempt to understand the lower animals in terms of human characteristics is reversed, and man's acts are explained in terms of the categories of animal behavior. Man is to be studied as the animal is studied, without any help from the individual under investigation. One discovers what the individual can do under given conditions and from the changes in accomplishment and the antecedents of the changes develops laws that may explain them. Behaviorism makes no use of introspection and omits all consideration of consciousness. Several of its exponents go on to deny that consciousness has any existence.

This attitude toward consciousness is in part due to other tendencies that have been active since the beginning of the century. For several reasons the notion of consciousness has been undergoing transformations during

the intervening years. By earlier writers consciousness was taken for granted as in some way made up of images of the objects thought about, which at the same time were not identical in structure with those things. An image of the object was in consciousness and the sum total of these images constituted consciousness. Charcot, Galton and others observed that the character of the images was not the same for all individuals, that certain individuals thought largely in terms of one or two senses, others used different senses or combinations of senses in the representation of objects. Still Galton assumed that thoughts were these images and that nothing else except perhaps words could constitute the vehicle of thought. Later workers, primarily Külpe and his followers in Germany and Woodworth in this country, noticed that there were many cases in which the mental content bore no relation to the thought represented and that in other instances no appreciable imagery was present during the thinking process. In the more abstract forms of reasoning, in reaching decisions and even in initiating movements often no imagery may be detected. In consequence the theory developed that imagery was not essential to thinking and therefore that consciousness either might have no existence or be very different from what it had been assumed to be. The "New Realists" (q.v.) also reached the conclusion from more abstract considerations that there could be no distinction between the objective reality and the mental state and prefer to call the common experience objective rather than subjective. Both tendencies prepared the way for behaviorism.

Behaviorism as a purely negative doctrine requires little space for the statement of its theses. As a method of investigation it makes positive contributions as has been seen, but as a system of metaphysics it asserts merely that consciousness does not exist, that one can become aware of man only from the outside and that it is useless to speculate what goes on inside because there is nothing there. The highest mental operations can be distinguished from the lowest reflex activities only by the complexity of the actions that result, the time that elapses between the stimulus and the response, and by the greater number of stimuli that co-operate in determining the former. As a method behaviorism abandons all attempt to make use of introspection, or to take any account of what the observer may note of the circumstances that may precede or accompany his action. It replaces these by more careful observation of the slightest movements. Thought is to be examined, not by studying what the individual says but by interpreting the slight unconscious movements of the human larynx. As a metaphysics behaviorism is but another attempt at a complete materialism, a system that has always fascinated certain types of mechanically minded individuals. It differs from materialism largely in that the explanations are less detailed, movements are reduced to reflexes and to instinct rather than immediately to chemical and mechanical forces.

That the behaviorists are not altogether satisfied to eliminate consciousness and leave nothing in its stead to account for internal awareness is admitted, perhaps unwittingly, in the attempts to identify the sensory excitations from the various muscles of the body with a subjective appreciation of the activities that may be observed from without. The more cognitive processes are in some way related to the "backstroke" from the voluntary muscles, the feelings and emotions to excitations from the visceral and other vital organs. Watson identifies thinking with movements of the larnyx, pleasure and pain with various contractions and relaxations of the sex organs. As neither has any immediate value in the world of behavior, they must have value only for subjective awareness. Whether consciousness is to be replaced by kinæsthetic processes, a familiar position, or whether it is merely an inconsistency that has been inadvertently admitted to the system cannot at present be determined.

Any judgment that may be passed upon the value of the system must take into consideration the incomplete development of the formulations. At present it is still little more than a program. There is much more of prophecy than of statement of results. Behaviorism as a method of psychological investigation offers much of promise. That many of the capacities and accomplishments of the individual can be determined objectively is obvious from the ordinary laboratory procedure and an extension of the method is always welcome. It is also true that many explanations of the phenomena ordinarily called mental can be derived quite as well from the related physiological and neurological processes as from the observation of consciousness. How far this can be extended is always a question that can be answered only by the outcome of the attempts. Statements of results can also be given in terms of behavior, but whether the present inconsistencies can best be eliminated by giving over the notion of consciousness altogether is not so clear.

Several obvious objections to the statement that consciousness has no existence in any form at once present themselves. First and most apparent is the conviction of many competent observers that they are actually conscious and that this consciousness takes the form of images. That the behaviorists also feel the necessity of recognizing some process of the kind is evident from the attempt mentioned above to give an internal awareness by means of sensory impulses from muscles and glands. A second objection is that so far they have made no attempt to explain how the observer interprets the movements that constitute the behavior of another. Some attempt should be made to account for the way in which behaviorists appreciate the phenomena in question as well as to explain the phenomena themselves. It might be objected, too, that the activities of man are fully explained in terms of physiological processes, i.e., ultimately in chemical and physical terms. In that case behaviorism becomes but a branch of physiology. In fact Bechterew has developed this point of view in what he calls objective psychology and reduces human activities exclusively to reflexes of various complexities and orders. Behaviorism must steer a narrow course between physiology on the one side and some sort of psychologism on the other, if it is to retain an independent position.

While behaviorism as a final metaphysic is at present but a suggestion with many inconsistencies involved in it, it does offer many advantages as a point of approach for psychological problems and as a means of defining psychology as a science without presupposing controverted positions. This definition need not exclude the use of introspection, or compel one to make use of elaborate roundabout methods of determining simple facts. Thus it is certainly much simpler to study reasoning by means of speech than by slight movements of tongue or larnyx. The results are much more certain and easier to interpret. Why speech should not be admitted to be a form of behavior or writing used in place of the laryngograph is not apparent from logical considerations. Stripped of these unessentials, behaviorism is of value as a method and as a slightly different point of view for the interpretation of the relation of mental and physical.

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**BEHEMOTH,** the name of an animal described in Job xl, 15, to the end. It is evidently an herbivorous animal; but commentators and naturalists are not agreed as to the particular species. Bochart, Gesenius and the generality of English commentators think the description most applicable to the hippopotamus; others think it was the elephant. Nor would it militate much against this interpretation that the elephant is not a native of the country in which the scene of the poem is laid. The author of the book of Job, whether Moses or not, may have been familiar with life in Egypt and Arabia, and if so, would naturally introduce scenery and adjuncts Egyptian or Arabian, or both combined; and that the elephant was well known in Egypt is proved not only by the use of ivory in the arts, specimens of which are preserved in abundance, but also by the representation of the animal itself on early Egyptian monuments.

**BEHISTUN,** bā-hĭs-toon', a mountain near a village of the same name, not far from Kermanshah, in Persian Kurdistan, celebrated for the sculptures and cuneiform inscriptions cut upon one of its rocky sides, which rises almost perpendicularly to the height of 1,700 feet. These works are about 300 feet from the ground, and were executed by the orders of Darius I, King of Persia. The inscriptions set forth his genealogy, enumerate his 19 victories obtained against the rebels in different provinces of his empire, and proclaim the final pacification of the latter and his gratitude to God. The sculptures consist of a large tablet, on which are represented a king with his foot upon a prostrate man, two long-speared warriors behind him, nine captives chained together by the neck before him, and above the whole a mythological figure. The inscriptions are executed with great neatness, and the whole monument is very well preserved, the rock, which had been carefully polished, having been coated with a hard silicious varnish, much harder, indeed, than the limestone beneath. The mountain was well known in ancient times, being mentioned by Diodorus under the name of Bagistanon. The same writer states also that an inscription and figures were engraved upon the rock by the orders of Semiramis, but these, if they ever existed, have now disappeared. Rawlinson was the first to copy and decipher the Behistun inscriptions.

**BEHM,** bām, **Ernst,** German geographer and statistician: b. Gotha, 4 Jan. 1830; d. there, 15 March 1884. In 1856 he became Dr. Petermann's chief assistant in editing the famous geographical periodical *Mitteilungen,* to the editorship of which he succeeded on his chief's death in 1878. In 1866 he founded the *Geographisches Jahrbuch.* In 1872 he began, in conjunction with H. Wagner, the useful 'Population of the Earth,' intended as a statistical supplement to the *Mitteilungen*; and from 1876 he undertook the statistical department of the 'Almanach de Gotha.' His more extended writings of this nature are marked by fullness, accuracy and marked lucidity of arrangement.

**BEHN,** bān, **Aphra,** or **Aphara,** English novelist and dramatist: b. Wye, Kent, 1640; d. London, 16 April 1689. She was the daughter of John Johnson, a barber; went to Surinam, then an English possession, when she was very young, and remained there some years, during which time she became acquainted with the native prince, Oroonoko, whom she made the subject of a novel, subsequently dramatized by Thomas Southerne. On her return she married Mr. Behn, a London merchant, but was probably a widow when selected by Charles II to acquire intelligence on the Continent during the Dutch War. She took up her residence at Antwerp, and it is said that, by means of one of her admirers, she obtained notice of the intention of the Dutch to sail up the Thames, and transmitted the news to England. This intelligence being discredited, she returned to England, and devoted herself to intrigue and writing for support. She published three volumes of poems, by Rochester, Etherege, Crisp and others, with some poetry of her own; and wrote 17 plays, the heartless licentiousness of which was disgraceful both to her sex and to the age which tolerated the performance of them. She was also the author of a couple of volumes of novels, and of the celebrated love-letters between a nobleman and his sister-in-law (Lord Gray and Lady Henrietta Berkeley). Pope, in his 'Character of Women,' alludes to Mrs. Behn, under the poetical name of ASTREA:

> 'The stage how loosely does Astrea tread,
> Who fairly puts her characters to bed.'

She was buried in the cloisters of Westminster Abbey. An edition of her works was published in London (1872). Consult *Anglia* for January 1902.

**BEHRENS**, bā'rĕns, **Bertha**, popular German novelist, who has written over the signature, W. HEIMBURG: b. Thale 1850; d. 1912. She completed 'Das Eulenhaus,' a posthumous novel by E. Marlitt, whose successor as contributor to *Die Gartenlaube* she became, and among her own novels may be named 'Aus dem Leben meiner alten Freunden' (1878; 12th ed., 1908); 'Lumpenmüllers Lieschen' (1879); 'Ihr einziger Bruder' (1882; 15th ed., 1909); 'Waldblumen' (1882; 6th ed., 1894); 'Dazumal' (1887); 'Trudchens Heirat' (1884); 'Um fremde Schuld' (1895); 'Antons Erben' (1898); 'Sette Oldenroths Liebe' (1902); 'Gesammelte Romane und Novellen' (10 vols., 1894–97); 'Dr. Danz und seine Frau' (1903); 'Wie auch wir vergeben' (1907); 'Ueber steinige Wege' (1908); 'Der Stärkere' (1909); 'Familie Lorenz' (1910).

**BEHRING**, ba'ring, **Emil Adolf**, German physician: b. Hansdorf 1854. He received his education in medical science at Berlin; became an army surgeon in 1880, and was appointed to the chair of medicine at Halle in 1894. In the following year he received the appointment of director of the Hygienic Institute, Marburg. Behring became known internationally through his discovery of a diphtheria antitoxin. He also made great progress in the study of immunity in tuberculosis and a new diphtheria serum was brought out by him in 1913. He has published 'Die Blutserumtherapie' (1892); 'Bekämpfung der Infektionskrankheiten' (1894); 'Beiträge zur experimentellen Therapie' (1900). In 1901 he received the Nobel prize in medicine for his discovery of diphtheria serum.

**BEHRING**, bā'rĭng or bē'rĭng, **Vitus**. See BERING.

**BEIGE**, a light woolen fabric, made of wool of the natural color; that is, neither dyed nor bleached.

**BEIJEREN**, bī'ĕr-ĕn, **Abraham van**, Dutch painter: b. The Hague 1620 or 1621; d. 1674. He studied first in his native city, later at Delft. In spite of the fact that he was one of the foremost genre painters of his time, most of his life was spent in abject poverty. His paintings are almost exclusively still life, his favorite subjects being fish and fruit. His canvases are found in great number in many of the principal European galleries, but he is especially well represented in Dresden, Vienna, Berlin, Stockholm, Petrograd and Lille.

**BEIJERLAND**, bī'ĕr-lant, Holland, a fertile island in the Netherland province of South Holland at the mouth of the Maas or Meuse, five miles south of Rotterdam. It is 15½ miles long and 8½ miles wide. It produces great quantities of flax. Pop. 13,300.

**BEILAN**, ba-lan', Syria, town on the Gulf of Iscanderoon, near the Beilan Pass, not far from Alexandretta. The town is 1,584 feet above the Mediterranean and is a summer resort for the foreign colony of Alexandretta. The pass has more than once been of military importance, and in 1832 was the scene of a battle between Turks and Egyptians. It is supposed to be the Pylæ Syriæ of the ancients and to have been traversed by Alexander and the Crusaders in their marches to the Orient.

**BEILSTEIN**, bil'stin, **Friedrich Konrad**, Russian chemist: b. Saint Petersburg 1838; d. 1905. He acquired his knowledge of chemistry at Heidelberg, Göttingen, Munich and Paris; in 1860 was made assistant to the celebrated Wöhler at Göttingen and six years later was appointed to the chair of chemistry at the Saint Petersburg Institute of Technology. He made extensive original investigations in analytical and organic chemistry. His published works include 'Anleitung zur qualitativen chemisehen Analyse' (Leipzig 1867); 'Die chemische Grossindustrie auf der Weltausstellung in Wien 1873' (1873); 'Handbuch der organischen Chemie' (1883), a standard work of which five supplementary volumes were issued by the German Chemical Society (1901–06).

**BEIRA**, bā'ra, Portugal, a province bounded by the river Douro on the north, by Spain on the east, and by the Tagus and Portuguese Estremadura on the south and by the Atlantic on the west. It was formerly divided into Beira Alta (Upper Beira) and Beira Baixa (Lower Beira). Its extent is 9,208 square miles, and the pop. (1911) 1,626,484. The capital is Coimbra. It is traversed by the Serra d'Estrella, and well watered by the Douro, Tagus, etc. With the exception of the coastal strip the soil is rocky. Chestnuts, grain, oil and wine are the principal products of the soil, while coal, iron, marble and salt are mined. Manufactures are at a low ebb, thread-making being about the sole industry at all developed. Commerce is slight, a condition due in great part to inadequate transportation facilities. For purposes of administration the province is subdivided into the districts of Aveiro, Viscu, Coimbra, Guarda and Castello Branco.

**BEIRA**, Portuguese East Africa, seaport on the coast, at the mouth of the Pungwe River, about 35 miles north of Sofala. It is the nearest port to the gold fields of Mashonaland, and a railway through Fontesvilla, Chimoio, Massikesse and New Umtali to Salisbury was completed in 1899. Beira has a good harbor. A breakwater guards the town from the encroachments of the river. The principal articles of export are rubber, sugar, tropical fruits, mining products and wax, while cotton manufactures, iron and liquors are among the chief imports. The port, established in 1891, is visited by about 500 vessels annually, approximating a total tonnage of 1,000,000 tons. Before the war the annual exports amounted to $2,750,000 and the imports to about $3,000,000. Pop. 3,450, of which 750 are whites.

**BEIRAM**, bā'rām. See BAIRAM.

**BEIRUT**, or **BEYROUT**, bê-rut', or bā-root' (ancient BERYTUS), Syria, a flourishing seaport, 60 miles northwest of Damascus. It stands on a tongue of land projecting into an open bay, and spreading out toward the land into a beautiful plain, backed by the mountains of Lebanon. It consists of the old town, composed generally of narrow, dirty streets, the residence of the poorer classes, and the business place of the merchants; and of the new town, which stretches around it. The latter, with its modern houses, carriage roads and gardens,— its churches, colleges, schools and hotels,— has little or nothing of the Oriental in its composition. Beirut has rapidly increased

since 1844 when its population was only 8,000, its rise being largely due to the extension of the silk trade, of which it is the centre. The better protection afforded both to foreigners and natives by its being the residence of the consuls-general has also contributed to its prosperity. It is the seat of a consulate of the United States. Besides silk its principal exports are olive oil, cereals, sesame seed, tobacco and wool. Shipbuilding is carried on here; an English company completed waterworks here in 1875 and gas works were built by a French company in 1886. Besides a Scottish school for Jews, there is an American-Syrian mission in Beirut, printing annually thousands of Arabic Bibles and having a school and hospital connected with it. In ancient times Beirut was a large and important Phœnician city, and under the Romans was long celebrated for its school of jurisprudence. The Byzantine Emperor Theodosius II raised it to the rank of a metropolis. It was destroyed by an earthquake in 551. The Arabs took possession of it in 635, and yielded it to Baldwin I, King of Jerusalem, in 1110. Saladin recaptured it from the Christians in 1187 but it soon fell into the hands of the Druses, who maintained their control of it until the last century. It was bombarded and taken by the British on 29 Aug. 1840. There is a railway to Damascus, Aleppo and Tripoli. A pasha, a Greek bishop, a Maronite archbishop and a papal delegate are stationed here. The population, about 120,000, is composed of 36,000 Mohammedans, 76,000 Christians, 2,500 Jews, 400 Druses and about 4,300 Europeans.

**BEISA**, bī'sa, a large Abyssinian antelope (*Oryx beisa*), differing from the gemsbok principally in lacking the tuft of hair on the throat and by the black patch on the front of the face being completely separated from the cheek stripe. This is probably the animal called oryx by the ancients, and may be the animal from which is derived the legend of the unicorn. Its straight horns (about 36 inches long) when seen in profile might easily appear as one. Herds of beisas are still numerous upon the plains of Somaliland. See also GEMSBOK; ORYX.

**BEISSEL**, bī'sĕl, **Johann Conrad**, German mystic: b. Eberbach 1690; d. Ephrata, Pa., 1768. He learned the trade of a baker, also studied music and was a successful violinist. Later he studied theology at Halle, but having been banished in 1720 for his Pietistic opinions he emigrated to Pennsylvania, settling first at Germantown and later in Lancaster County. In 1724 he returned to Germantown and adopted the Dunker faith, but his views as to celibacy and his observance of Saturday as the Sabbath were unacceptable to his neighbors, and he therefore established a sect of Seventh Day Dunkers. He attempted a hermit life, but his fellow believers gathered about him and in 1735 he founded the famous Settlement of Ephrata, Pa. (q.v.), and remained at its head till his death. At the settlement he practised many of his socialistic and religious theories. He was the author of the earliest volume of German poetry published in America, 'Gottliche Liebes- und Lobestöne' (1730), and published several collections of hymns, such as 'The Voice of the Lonely and Forsaken Turtle Dove — that is, of the Christian Church; by a Peaceable Pilgrim traveling to Tranquil Eternity' (1747); and 'Paradisaical Wonder-play' (1766). In the latter are found the 'Brother Song' of the sect with its 215 stanzas, and the 'Sister Song' with 250. He was known at Ephrata as Friedsam, and on his tomb may be read the inscription: "Here rests an outgrowth of the love of God, 'Friedsam,' a solitary Brother, afterward a leader, ruler, teacher of the Solitary and the Congregation of Christ in and around Ephrata." For an account of his life consult 'Chronicon Ephratense' (Ephrata 1786); Sachse, 'German Sectarians of Pennsylvania' (1899–1900).

**BEIT-EL-FAKIH**, bāt-ĕl-fā'kę, Arabia, a town in Yemen, 32 miles south-southeast of Hodeidah, 77 northeast of Mocha and about 20 miles from the Red Sea. It is celebrated for its trade in Mocha coffee, which is chiefly grown in the neighborhood, and of which about 12,000,000 pounds are exported annually. Pop. about 8,000. The word *Beit*, signifying a house or hut, is prefixed to the name of various other small towns and villages in Arabia.

**BEITALLAH**, bāt-al'lą (Ar., "God's House"), the name of the building in Mecca within whose enclosure the Caaba (q.v.) is located. It is also known as "the holy house" and "the old house."

**BEITZKE**, bīts'kĕ, **Heinrich Ludwig**, German historian: b. Muttrin, 15 Feb. 1798; d. 10 May 1867. His publications include 'History of the German War for Freedom' (1855); 'History of the Russian War — Year of 1812' (1856); 'History of the Year 1815' (1865), etc.

**BEJA**, bā'zha (anciently PAX JULIA), Portugal, town in the province of Alemtejo, 85 miles southeast of Lisbon. It stands on a height, surrounded by walls flanked with 40 towers, and is defended by an old fort. It was founded by the Romans, and some Roman remains are still visible. It contains an interesting mediæval castle, a cathedral, the notable church of Our Lady of the Conception and a Roman aqueduct. Two fairs are held here annually. The city has a considerable trade in the cattle and agricultural products of the fertile region adjacent, and there are also tanneries, potteries and oil refineries. Pop. 9,000.

**BEJAPUR**, bē-ja-pōr' (anciently VIJAYAPURA, the impregnable city), Hindustan, a town in the Bombay presidency, near the borders of the Nizam's dominions, about 245 miles southeast of Bombay and near the right bank of an affluent of the Krishna. For many centuries it was the capital of a rich and powerful kingdom, coming under the sway of Hindu and Mussulman alternately. Aurungzebe captured it in 1686 and in the 18th century the Mahrattas seized it. In 1818 the British gave it to the Rajah of Satara. From the great extent of the ruins here it would seem to have been formerly one of the largest cities of India. In its present state it may be described as two towns adjoining each other — the fort on the east and the old town on the west. The former, though much less than the latter, has one entire and regular street 50 feet wide and nearly three miles long. Some of the mosques and mausoleums of Bejapur are elaborately elegant, but the prevailing character is solid and massive.

The great dome of Mahomet Shah's tomb is visible far off. The fretwork on the ceilings and verandahs, the panels covered with passages of the Koran in bas-relief, and the stone trellises pierced with a mesh-work of Arabic characters, are all in the richest style of Oriental sculpture. Among the religious structures is a Hindu temple, built in the earliest style of Brahmanical architecture. There are here some guns of enormous size; one cast in 1549 is the largest piece of brass ordnance extant. Bejapur has become the chief town of Kaladgi district, and some of the old palaces are now used for public purposes. Pop. (1911) 27,615. Consult Fergusson, 'Ancient Architecture in Hindustan' (1847); Ferguson, 'The Study of Indian Architecture' (1867).

**BEJAR**, bā'jär, Spain, town in the province of Salamanca, 41 miles south of the town of that name, on the Cuerpo de Hombre River, on a plateau 3,150 feet above sea-level. It is an important industrial centre and manufactures cotton and woolen cloths, yarn, thread, ribbons, soap and bread. There is also a large trade in the products of the region, consisting of chestnuts, grain, vegetables and wine. Bejar is the seat of the Duke of Bejar, whose palace is located here. The town also contains three churches of architectural note. Lord Hill defeated a French force here in 1813. In its vicinity are warm sulphur springs. Pop. 9,209.

**BEKE**, bēk, **Charles Tilstone**, English traveler: b. Stepney, Middlesex, 10 Oct. 1800; d. Bromley, Kent, 31 July 1874. In his 20th year he entered on a business career and was thus led to visit Italy. On his return he studied law at Lincoln's Inn and in 1834 he followed up several archæological articles in periodicals by publishing 'Origines Biblicæ, or Researches in Primeval History.' In 1840 he set out on his first journey to Abyssinia, in which he not only rendered important services to discovery but collected vocabularies of the native dialects. Returning in 1843 he was awarded the gold medals of the Royal Geographical societies of London and Paris, and again engaged in business. He subsequently made several efforts to open up commercial intercourse with Abyssinia, and in 1861–62 he traveled in Syria, Palestine and Egypt. When the news of the detention of several British subjects by the King of Abyssinia arrived in 1864, Beke went out to secure their release, and was temporarily successful, but ultimately King Theodore had to be coerced by war. In the direction of the military operations Beke's knowledge of the country proved of the utmost value. In 1870 he was awarded a civil list pension of $500 per annum. In 1873 he set out for Egypt in order to explore the country traversed by the Israelites, and to locate Mount Sinai. His published works comprise 'The Sources of the Nile' (1860); 'The British Captives in Abyssinia' (1865); 'King Theodore and Mr. Rassam' (1869); 'The Idol in Horeb' (1871); 'Jesus the Messiah' (1872); 'Discoveries of Sinai in Arabia, and of Midian' (1878).

**BÉKÉS**, bā'kāsh, or **BÉKÉS-CSABA**, chŏ'bŏ, Hungary, market town and capital of the county of the same name, at the junction of the Black and White Körös, 41 miles southwest of Grosswardein and 105 miles east-southwest of Budapest; formerly strongly fortified. There is considerable trade in flax, cattle, wheat, wine and honey. Linen and hemp fabrics are among the chief manufactures. With the exception of Budapest Békés has the largest Protestant colony in Hungary. Of its 42,599 souls, the majority profess the Lutheran faith.

**BEKKER**, bĕk'kĕr, **Elizabeth**, Dutch novelist: b. Vlissingen, 24 July 1738; d. The Hague, 5 Nov. 1804. She married Adriaan Wolff, a Reformed Church minister at Beemster, who died in 1777, and she lived afterward in closest friendship with Agathe Deken, who also collaborated in her most important works, 'History of Sara Burgerhart' (1782); 'History of William Leevend' (1784–85); 'Letters of Abraham Blankaart' (1787–89); 'Cornelia Wildschut' (1793–96).

**BEKKER, Immanuel**, German scholar, distinguished by his recensions of the texts of Greek classics: b. Berlin, 21 May 1785; d. there, 7 June 1871. He studied in Halle, and, in 1811, became professor of philology in his native city. The results of his researches in the libraries of France, Italy, England and Germany appear in his numerous recensions of texts derived solely from manuscripts, and independently of printed editions. The writers included in these recensions are Plato, the Attic orators, Aristotle, Thucydides, Theognis, Aristophanes, Sextus Empiricus, as well as Livy and Tacitus. He was also a collaborator of 'Corpus Inscriptionum Græcarum,' and edited 25 volumes of the 'Corpus Scriptorum Byzantinorum.' He is the author of 'Anecdota Græca' (3 vols., 1814–21) and 'Studies in Old French.' Consult Sandys, 'A History of Classical Scholarship' (Vol. III, 1908).

**BEL**, bĕl, one of the most important gods of the Babylonian mythology and the Phœnician counterpart of Baal; mentioned in Scripture, in Is. xlvi, 1; Jer. l, 2; li, 44; in the Septuagint, in Baruch vi, 40, and in the apocryphal additions to the book of Daniel, as well as by classical authors. See BAAL.

**BEL AND THE DRAGON**, certain apocryphal chapters added to the canonical Book of Daniel. The Jews do not consider them part of their Scriptures. They were penned probably by an Alexandrian Jew, the language used being not Hebrew or Aramæan, but Greek. The story of Bel and the Dragon consists of two legends recounting (1) how Daniel enlightened Cyrus, represented as having been a devout worshipper of Bel, by proving that the immense supplies of food laid before the idol were really consumed, not by it or by the inhabiting divinity, but by the priests and their families. (2) On Cyrus urging that the dragon, also worshipped, was at least a living god, Daniel poisoned it, for which he was thrown into a lion's den, where the Prophet Habakkuk fed him. Ultimately he was released, and his persecutors put to death. The above narrative must not be confounded with one called also 'Bel and the Dragon,' translated by Fox Talbot from the cuneiform tablets. Mr. Talbot believes that the dragon, seven-headed, like the one in Revelation, would, if the tablets were complete, prove the same being that seduced some of the heavenly "gods," or angels, from their allegiance (Rev. xii, 4; Jude vi), for which he was slain by Bel. The resemblance is not to the apocryphal book now under consid-

eration, but to the combat between Michael and the Dragon in Rev. xii, 7–17.

**BELA**, bā'lō, the name of four Hungarian kings of the Arpad dynasty. BELA I, son of Ladislaf, competed for the crown with his brother Andrew, whom he ultimately defeated, and mounted the throne in 1061. He established a coinage and weights and measures. BELA II, surnamed the Blind, because his eyes had been put out in early life by his uncle, succeeded to the throne in 1131, and at first seemed inclined to act with moderation and justice, but the vindictive spirit of his Queen involved him in quarrels with his nobles, and his own intemperate habits brought on a disease which terminated his life in 1141. BELA III, grandson of Bela II, succeeded, in 1173, and held the reins of government with a strong hand, vigorously correcting the abuses and putting down the turbulent spirit which the troubles of previous reigns had engendered. He also repelled incursions of Bohemians, Poles and Austrians, and retaking the towns of which the Venetians had possessed themselves, compelled them to accept of peace in 1189. He died in 1196, and was succeeded by Emeric, one of two sons by his Queen, a sister of Philip Augustus, king of France. BELA IV succeeded his father, Andrew II, in 1235, and was shortly after obliged to collect an army to oppose the Tartars, who had invaded the country. In the battle which ensued he was signally defeated, and obliged to take refuge in Austria, where he was detained prisoner, and only recovered his liberty by the payment of a large ransom. The Tartars having retired in 1242, Bela regained his throne, and made it his object to repair the results of their invasion. He subsequently established his rule over Bosnia and northern Serbia, and died in 1270.

**BELAND, Henri Sévérin**, Canadian physician and statesman: b. Louisville, province of Quebec, 11 Oct. 1869. He graduated B.A. at Three Rivers, and took his medical course at Laval University (M.D. 1893), afterward practising his profession at New Bedford, Mass. He was returned to the Quebec legislature in 1897 for the county of Beauce, and since 1901 has represented that constituency in the House of Commons in the Liberal interest. In 1909 he was appointed a member of the commission of conservation, and in 1911 was Postmaster-General in the Laurier administration, until the defeat of that administration in the same year. He was in Belgium when the Great War broke out in 1914, joined the Belgian Hospital Corps, served at Liège and the siege of Antwerp, was wounded by shell fire and taken prisoner by the Germans, and held by them as a prisoner of war.

**BELARIUS**, a character of prominence in Shakespeare's 'Cymbeline.' Exiled by King Cymbeline, he carries away with him the two sons of the monarch and rears them as his own.

**BELASCO, David**, American dramatist: b. San Francisco, Cal., 25 July 1859. He was graduated at Lincoln College in 1875. In 1874 he made his stage début at the Metropolitan, San Francisco, and for a time was stage manager of the house and of Baldwin's Grand Opera. His success in adapting plays to the local needs of his community led him to devote himself exclusively to the latter work. In 1880 he produced 'Hearts of Oak' and toured the country in it with James A. Hearne. He became stage manager of the Madison Square Theatre, New York, and later was connected with the Lyceum Theatre. He is now owner and manager of the Belasco Theatre, New York. Of late years he has devoted himself to the betterment of the mechanical details of the stage. Among Mr. Belasco's great successes have been 'The Wife' (1887) and 'The Charity Ball' (1889), written jointly with H. C. de Mille; 'Lord Chumley,' with E. H. Sothern in the title rôle (1888); 'The Girl I Left Behind Me,' jointly with F. Fyles (1893); 'The Heart of Maryland,' with Mrs. Leslie Carter in the principal rôle (1895); 'Naughty Anthony' (1899). Among his other plays are 'Zaza' (1898); 'May Blossom' (1894); 'Men and Women' (1890); 'La Belle Russe' (1882); 'Valérie' (1886); 'Du Barry' (1901); 'The Darling of the Gods' (1902); 'Sweet Kittie Bellairs' (1903); 'Adrea' (1904); 'The Music Master' (1904); 'The Rose of the Rancho' (1905); 'The Girl of the Golden West' (1905); 'A Grand Army Man' (1907); 'The Warrens of Virginia' (1908); 'The Fighting Hope' (1908); 'The Easiest Way' (1909); 'The Lily' (1909); 'Is Matrimony a Failure?' (1909); 'The Concert' (1910); 'Nobody's Widow' (1910); 'The Woman' (1911); 'The Return of Peter Grimm' (1911); 'The Case of Becky' (1911); 'Years of Discretion' (1912); 'A Good Little Devil' (1912); 'The Secret' (1913); 'The Phantom Rival' (1914); 'Marie Odile' (1915); 'The Boomerang' (1915).

**BELBEIS**, bĕl-bās', Egypt, town 20 miles north-northeast of Cairo, near the railway to Suez and on the border of the desert, formerly of some importance as being on the route to the East. The ruins of the ancient Bubastis are in its neighborhood. Pop. about 11,000.

**BELCH, SIR Toby**, a roistering character in Shakespeare's comedy, 'Twelfth Night.'

**BELCHER, SIR Edward**, English admiral and hydrographer: b. Halifax, N. S., 1799; d. 18 March 1877. Having taken part as midshipman in the defense of Gaeta and the battle of Algiers, he was in 1819 appointed to the *Myrmidon* sloop, destined for the African station, and in 1825 became assistant surveyor to the Bering Strait discovery expedition under Captain Beechey. In 1829 he was promoted to the rank of commander, and served on the coast of Africa, and of Portugal, rendering on the latter occasion valuable services to the British residents by protecting their property during the political troubles in Portugal. Subsequently he was engaged for a number of years in a voyage around the world in the surveying vessel, *Sulphur*. In 1841 he explored the inlets of the Canton River, and materially assisted in securing the triumph of the British army. In acknowledgment of these services, he was knighted. Afterward he was employed on board of the *Samarang*, on surveying service in the East Indies, and was severely wounded while assisting the Rajah of Sarawak, Sir James Brooke, to subdue the pirates of Borneo. From 1852 to 1854 he commanded the expedition in search of Sir John Franklin. On his return to England, he was tried before a court-martial for voluntarily abandoning the ships. The case against him, however, was not legally supported.

he was acquitted, and his sword returned to him, but while some of the other officers were commended, his name was passed over in significant silence. In 1872 he became rear-admiral. He published 'The Last of the Arctic Voyages' (1855); 'Narrative of a Voyage to the East Indies.'

**BELCHER, Jonathan,** colonial governor of Massachusetts: b. Cambridge, Mass., 8 Jan. 1681; d. Elizabethtown, N. J., 31 Aug. 1757. He was graduated at Harvard, in 1699, and spent six years in Europe before returning to Boston, as a merchant. From 1730 to 1741 he was governor of Massachusetts and New Hampshire, a dispute over his salary causing his removal. In 1747 he was made governor of New Jersey and gave it a successful administration. He enlarged the charter of the College of New Jersey (Princeton) and gave that institution, among other benefactions, his own valuable library. 'The Belcher Papers' were issued by the Massachusetts Historical Society, 1893.

**BELCHITE,** bel-che'tā, Spain, town 22 miles south-southeast of Saragossa, on the Aguas, a tributary of the Ebro, noted as the scene of a victory gained 18 June 1809, by the French, under Suchet, over the Spanish forces under Blake. Belchite has some manufactories of woolens. Pop. 3,333.

**BELCIKOWSKI,** bĕl-tsē-kōv'-skē, **Adam,** Polish writer: b. Cracow 1839; d. 1909. Graduating from Cracow University in 1865, he was, in the following year, appointed instructor in Polish literature at the University of Warsaw. Three years later he was appointed to the same position at Cracow, where he became a member of the Cracow Academy in 1870. His writings are chiefly dramatic and critical. Among his historical dramas are 'Adam Tarlo' (1869); 'Hunyady' (1870); 'Dwaj Radziwillowie' (1871); 'Franceska da Rimini' (1873); 'Kmita i Bondarowna' (1875); 'Krol Wladyslaw Warnenczyk' (1877). His collected essays appeared in Warsaw (1886) with a biographical introduction by Chmielowski.

**BELCOURT,** bĕl'-coor', **Napoleon Antoine,** Canadian lawyer and statesman: b. Toronto, 15 Sept. 1860. He was educated at Three Rivers and Laval University, Montreal (master of laws, 1882). He was called to the Quebec bar, 1882, and to that of Ontario 1884. He represented the city of Ottawa in the House of Commons, 1896–1907, and was speaker from 1904 to 1907, when he was nominated to the Senate. A representative French-Canadian, he has written much on social and educational subjects; took a leading part in the bi-lingual controversy, and pleaded the case of French schools of Ontario in the appeal before the judicial committee of the imperial privy council in 1915.

**BELDING,** Mich., city in Ionia County, on the Pere Marquette Railroad, 25 miles northeast of Grand Rapids and 139 miles northwest from Detroit. It has silk mills, basket, casket and furniture factories, machine shops, paper box factories and other industries. The first silk mill in the West was erected here. Pop. 5,000.

**BELEM,** or **BELEM DO PARÁ,** the official name of the capital of the Brazilian state of Pará (q.v.).

**BELEMNITES,** a name for straight, solid, tapering, dart-shaped fossils, popularly known as arrow-heads, thunder-bolts, finger-stones, etc., but in reality the internal shell or skeleton of a molluscous animal allied to the squid or sepia, and the type of an extinct family, *Belemnitidæ*. The name was first applied by Agricola in 1546. The fossil remains of the animal (of which 350 species are known) are met with in rocks ranging from the lower Liassic to the uppermost cretaceous, and are most abundant in Europe, Asia and North America. They vary from one to 15 inches in size; and are particularly abundant in the strata of the green sand formation in New Jersey. The part preserved, often detached from the loose strata, is a pointed cone of brown color and stony material, resembling in shape the head of a dart or javelin, whence their name. Belemnites are one of the earliest known fossils.

**BELERIUM,** or **BOLERIUM,** the ancient appellation of LAND'S END in Cornwall, England, but the origin of the name is uncertain.

**BELFAST,** Ireland, the chief commercial and manufacturing city of the island, a parliamentary borough and the capital of the province of Ulster, on the river Lagan at the head of Belfast Lough, about 113 miles by rail north of Dublin. It is the terminal station of the Great Northern and the Belfast and County Down railways, the latter, 80 miles of track, connecting with chief points on the seacoast. The greater part of it is built on low alluvial land on the banks of the Lagan, not more than six feet above high-water mark. The country around is extremely beautiful; the position of the town renders its appearance from a distance by no means imposing, but the Lough itself presents a fine scene; and the slopes of the hills that bound it and partly encircle the town are thickly studded with the villas and country houses of the merchants.

**Streets and Bridges.**— Many old squalid districts have been destroyed to make way for spacious, regular and well-lighted streets, the finest of which is Royal avenue, where numerous public buildings are situated. An excellent electric tramway service and electric light have been introduced and the sewage system has been improved. There are many handsome houses, but architecturally the city has scarcely kept pace with its commercial prosperity. Four bridges cross the river, one of which, the Queen's Bridge, is an elegant structure of five arches, each of 50 feet span.

**Churches, Public and Commercial Buildings, etc.**— Many of the churches are handsome buildings. Saint Anne's Cathedral on the site of the oldest Episcopal (Church of Ireland) church had the foundation stone laid in 1899, and was opened for service in 1904; Trinity, a fine specimen of Gothic, and Saint George's, adorned with a beautiful portico, are also deserving of notice among the Episcopal churches. The Presbyterian churches, which outnumber all others in the city, include two fine buildings on Fitzroy avenue and Elmwood avenue. Saint Patrick's serves as the Roman Catholic cathedral, but is architecturally inferior to Saint Malachy's. The secular buildings include the new city hall, costing $1,800,000; Queen's Uni-

versity, a massive pile in the later Gothic style, with a façade 600 feet in length; the Presbyterian Theological College; the Methodist College, a handsome building erected and endowed in 1868 at a cost of $580,000; the municipal buildings; the county courthouse; the commercial buildings and exchange; the buildings for the customs and inland revenues; the post-office; the offices of the Ulster Bank, the Bank of Ireland, the Provincial Bank, the Belfast Bank, the National Bank, the Scottish Amicable, Scottish Provident and North British and Mercantile Assurance companies; the Grand Opera House; the Theatre Royal; the county jail; the Ulster Hall; the Presbyterian Assembly Hall; the Belfast Museum; the Albert Memorial clock tower, 143 feet high, etc.

**Educational Institutions.**— Of the educational institutions the most prominent is Queen's University, first opened to students in 1849, and raised to the rank of a university in 1908, with 65 teachers and 550 pupils (1913-14). Candidates for the ministry of the Presbyterian Church of Ireland receive a training in the General Assembly's Theological College, founded in 1853. The Methodist College and the Campbell College (a secondary school) are important institutions; while the New Municipal Technical Institute and the Royal Academy and the Royal Academical Institution also deserve mention. There is a free public library belonging to the city.

**Newspapers, Charitable Institutions, Parks.**—The chief and oldest newspaper in the Belfast *News-Letter,* established 1737. The charitable institutions are very numerous and important. In the city there are six extensive public parks, besides the borough cemetery.

**Trade, Manufactures, Shipping, Harbor, etc.**— Belfast is the centre of the Irish linen trade and manufacture, having within itself the great majority of the spinning-mills and power-loom factories in Ireland, some of them of immense size and of imposing appearance. The spinning of flax and weaving of linen are the staple industries. Linen goods to the value of $68,131,000 were exported from Belfast in 1916. The cotton manufacture, which had decreased considerably, showed a considerable increase, imports of cotton yarn in 1916 being 10,486 tons, compared with 6,222 tons in 1915 and 3,251 tons in 1914. There are two large shipyards, and in their yard and engineering works Messrs. Harland and Wolff employ some 12,000 hands, and have turned out some of the finest vessels afloat, one of their triumphs being the great steamer *Olympic,* built for the White Star Line. There are also breweries, distilleries, flour-mills, oil-mills, saw-mills, foundries, printing and lithographic works, tanyards, chemical works, aërated waterworks, the largest rope works and tobacco factories in Great Britain, felt manufactories, etc. The commerce of Belfast surpasses that of any other Irish seaport and is rapidly increasing. By its customs revenue it is the fifth port in the United Kingdom. The port covers an area of over 2,000 acres, including docks, wharves and shipyards. Belfast Lough, which forms the approach by sea, is a fine sheet of water between the counties of Down and Antrim, about 14 miles in length and six miles in breadth at the entrance, narrowing toward the city. The Victoria Channel (300 feet wide) was cut about 1840, and improved in 1882, to accommodate large vessels. New docks have been constructed, giving a total harbor area of over 100 acres. The Alexandra Dock is 852 feet long, and the new graving dock, constructed 1903-10, at a cost of $1,750,000, is the largest in the world. The most important branch of traffic by sea is across the channel. A large fleet of steamers ply regularly between Belfast and London, via Heysham, Plymouth, Bristol, Liverpool, Holyhead, Fleetwood, Barrow, Whitehaven, Ardrossan, Glasgow, Dublin, Waterford, etc. There is also an extensive direct trade with British North America, the Mediterranean, France, Belgium, Holland and the Baltic. In 1786 only 772 vessels (34,287 tons) entered the port; whereas in 1915 the net tonnage of the 9,037 vessels that used the port was 3,288,600. The exports to the United States alone in 1916 amounted to $19,587,133. The chief exports are linen, whisky, aërated waters, iron ore and cattle; the chief imports grain, cotton, flax, linen yarn, iron, steel, coal, timber, etc. In 1916 over 2,639,000 tons of goods were brought in and 674,000 tons went out. The customs duties amount to over $15,400,000 per annum, exclusive of what passes through the Inland Revenue Department. Much of the inland trade is carried on by the Lagan Navigation, which connects the town with Lough Neagh; the Ulster Canal, connecting Lough Neagh with Enniskillen; and by systems of railway, namely, the Great Northern, the Belfast and County Down.

**History and Administration.**— Belfast is comparatively modern. In the 16th century it was merely a fishing village with a fortress; in 1613 it was granted a charter by James I, and about 1637 it obtained the privilege of levying certain duties on goods and became a regular seaport; but its prosperity subsequently was much impeded by the civil war. Early in the 18th century it was described as a handsome, thriving town, but its period of modern prosperity dates from the introduction of the cotton manufacture in 1777, the establishment of ship-building on a large scale in 1791 and the introduction of machinery in the linen industry in 1830. In 1888 Belfast became a city; in 1892 the mayor received the title of lord mayor, and in 1896 the city boundaries were extended, the wards were increased from five to 15, and the municipal corporation was made to consist of 15 aldermen instead of 10 and of 45 councillors instead of 30. In 1899 it became a county borough. Belfast has frequently been the scene of riots between the Protestant and Roman Catholic population, the latter of whom are largely outnumbered. The harbor is under the management of an independent board. The city maintains the elementary schools, workingmen's dwellings, libraries, museums and fire department, and owns the gas and electric-light plants, abattoirs and tramways. Belfast returns four members to Parliament. An American consul is resident here. Total area 16,594 acres. Pop. (1901) 349,180; (1911) 386,947.

Consult Benn, G., 'History of Belfast' (Belfast 1877); Fisher, 'Trading Centres of the Empire: Belfast' (London 1901); Young, R. M., 'Historical Notices of Old Belfast' (Belfast 1896.

**BELFAST**, Me., city and county-seat of Waldo County, at the head of Penobscot Bay, and on the Maine C. Railroad, 30 miles from the ocean, and 132 miles northeast of Portland. It has a fine harbor, a large domestic trade and important manufactures, including iron works, shoe factories, lumber mills and chemical works. The public library contains 5,000 volumes. The city contains also a theatre, opera house and several fine bank buildings. The most notable industry is ship-building, begun here in 1793. Belfast was settled in 1770; incorporated as a town and named from Belfast, Ireland, in 1773; was invested by the British in 1815, and was given a city charter in 1853. Government is vested in a mayor, elected annually and a city council of two chambers. Consult Williamson, 'History of the City of Belfast' (1877). Pop. 4,618.

**BELFORT**, bĕl-fôr, France, fortified town in the department of Haut Rhin, on the Savoureuse, commanding the Trouée de Belfort or pass between the Vosges and Jura Mountains, 47 miles northeast of Bésançon. It is well built and has an ancient castle situated on a lofty rock, a fine parish church, barracks, town house, court of primary resort, public library containing 20,000 volumes and a communal college. Manufactures — hats, clocks, wax tapers, iron wire, sheet iron, etc. There are also breweries, tanneries and iron furnaces. The principal trade is in grain, wine, brandy and liquors. Iron is extensively worked in the neighborhood. Austria ceded Belfort to France in 1648 and it was later fortified by the celebrated Vauban. In 1814 Belfort was besieged by the Allies without success. In the Franco-German War it was invested by the Germans, 3 Nov. 1870, and, after holding out with great bravery, capitulated, 16 Feb. 1871. In recognition of the bravery which the garrison had shown in its defense, it was allowed to march out with full military honors. This defense is commemorated by the huge "Lion of Belfort" in front of the citadel, the work of Bartholdi. Belfort, with the district immediately surrounding it, is the only part of the department of Haut Rhin, which remained to France on the cession of Alsace to Germany, 26 Feb. 1871. Previous to the Great War Belfort was deemed impregnable because of its extensive system of fortifications. The fate of the Belgian fortresses in the war has, however, caused a revision of this estimate. Pop. 39,371. Consult Bardy, 'Etude historique sur Belfort' (Belfort 1900).

**BELFRY**, a bell-tower or bell-turret. The term was employed in mediæval siege-craft for a movable wooden tower of several stages employed in attack; and also for a watch-tower with an alarm bell. A bell-tower may be attached to another building, or may stand apart; a bell-turret usually rises above the roof of a building, and is often placed above the top of the western gable of a church, the terms bell-cote, bell-gable, being also used. The part of a tower containing a bell or bells is also called a belfry. Strictly speaking, belfry is a civil and not an ecclesiastical term: in the Middle Ages the bells in the municipal belfry were employed in calling the citizens to arms or to council, and thus became the symbols of popular freedom. The belfry of Bruges, commenced in 1291, is 353 feet high, and has a celebrated carillon of bells. It was not till the 14th century that clocks were placed in belfries. The detached bell tower is of frequent occurrence on the continent of Europe, and in England the Cathedral of Chichester and a few parish churches possess such an adjunct. In the United States such structures are infrequent, but in the town of Waterville, N. Y., is a detached belfry or clock-tower with quarter chimes, and Brown University at Providence has a handsome detached clock tower erected within its grounds.

**BELGÆ**, a group of German and Celtic tribes who inhabited the country extending from the Atlantic Ocean to the Rhine, and from the Marne and Seine to the southern mouth of the Rhine, which is united with the Meuse. From time to time until the period of Cæsar, German nations pushed forward beyond the Rhine, partly expelling the Celts from their seats, partly uniting with them; and from this union sprang a mixed nation, which, in its language as well as in its manners, resembled the Germans more than the Celts. According to the testimony of Cæsar, they were the most valiant of the Gauls. Belgic tribes seem also to have settled in early Britain.

**BELGAUM**, bĕl-gâm', India, town in the district of Belgaum, Bombay presidency, on the eastern slope of the western Ghats, 2,500 feet above the sea. It consists of a native town, fort and cantonments, and contains the usual courts and offices, two schools for the children of natives of rank and various other schools. In 1818 the fort and town were taken by the British after a gallant resistance by the Peishwa's forces. The place has progressed under British rule and its citizens have not been backward in furthering various public enterprises. In 1848 they subscribed a large sum for the betterment of the means of communication, of which their community has continued to reap the fruits. From the salubrity of the climate and the purity of the water, Belgaum has been selected as a permanent military station. Belgaum manufactures cotton cloth and carries on a trade in salt, dried fish, dates, coin, etc. Pop. 42,623. Area of district 4,656 square miles; pop. 943,820.

**BELGIC CONFESSION**, a credal statement put forth in French in 1561 by Guido de Bres of Brabant and others, and sent to Philip II of Spain to persuade him to tolerate the Calvinistic faith. In 1562 it was published in the vernacular and subsequently in Dutch and German, and was acknowledged by the synods of Antwerp (1566) and Dort (1619). A translation appears in Schaff's 'Creeds.'

**BELGIOJOSO**, bĕl-jō-yō'sō, **Cristina** (PRINCESS OF), Italian patriot: b. Milan, 28 June 1808; d. there, 5 July 1871. She took a prominent part in the revolution of 1830 and was exiled by the Austrian government. She lived in Paris for several years and then returned to Italy in 1847, and in the revolution of 1848 offered her whole fortune to the patriot cause and equipped several hundred volunteers at her own expense. A second exile followed on the occupation of Rome by the French in 1849, but she returned under the amnesty of 1856 and supported the policy of Cavour. She edited periodicals in the interest of Italian liberty and was the author of several books,

among them 'Souvenirs of Exile' (1850); 'History of the House of Savoy' (1860); and 'Reflections on the Actual Condition of Italy' (1869).

**BELGIOJOSO**, Italy, town in the province and eight miles southeast of Pavia. It is situated in a beautiful and fertile plain between the Po and the Olona, and is well built, containing a parish and an auxiliary church. The old castle, in which Francis I was temporarily lodged after being taken prisoner at the battle of Pavia, in 1525, has been converted into a magnificent château, surrounded by fine gardens. Pop. 4,800.

**BELGIUM** (Flemish, Belgie; French, Belgique; German, Belgien), a kingdom of Europe, bounded north by Holland, northwest by the North Sea, west and south by France, and east by the duchy of Luxemburg, Rhenish Prussia and Dutch Limburg. Its greatest length, northwest to southeast, is 165 miles; greatest breadth, north to south, 120 miles; area, 11,373 square miles. The country is triangular in shape, having its vertex in the west, the base resting on Germany in the east, the shorter side facing Holland and the sea and the larger forming the frontier of France. For administrative purposes Belgium is divided into nine provinces — Brabant, Antwerp, East Flanders, West Flanders, Hainaut, Liége, Limburg, Luxemburg and Namur. Differing little in area, these provinces are arranged to form a compact and commodious division of the country. Brussels, the capital, is situated in Brabant, which occupies the centre and may be considered the metropolitan province. The following table shows the areas of the provinces, with their estimated population, 31 Dec. 1912:

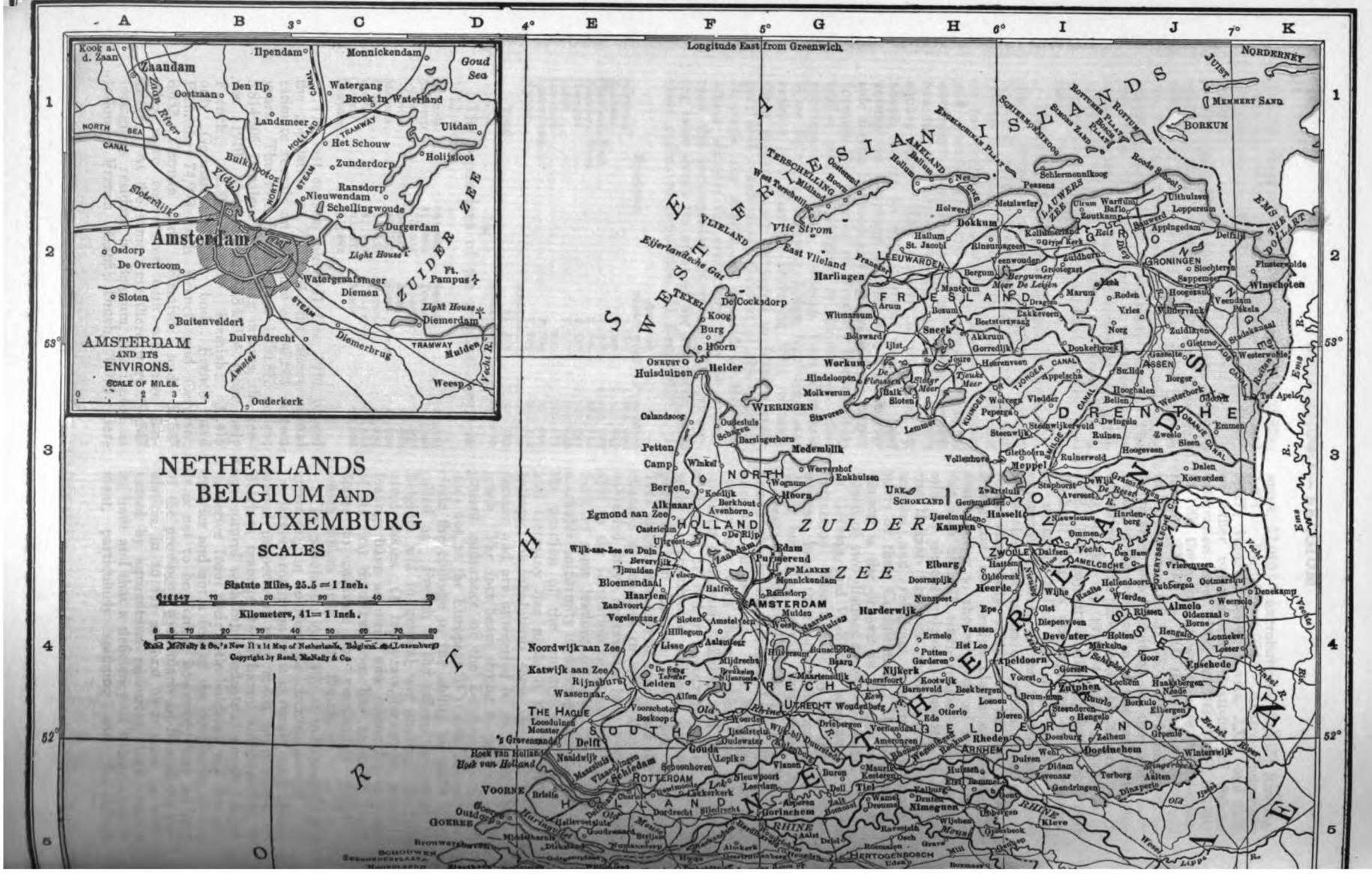
| Provinces | Areas in square miles | Population |
|---|---|---|
| Antwerp | 1,093 | 1,004,909 |
| Brabant | 1,268 | 1,522,941 |
| Flanders, East | 1,158 | 1,134,079 |
| Flanders, West | 1,249 | 884,777 |
| Hainaut | 1,437 | 1,247,042 |
| Liége | 1,117 | 896,649 |
| Limburg | 931 | 284,171 |
| Luxemburg | 1,706 | 232,900 |
| Namur | 1,414 | 364,319 |
| Total | 11,373 | 7,571,387 |

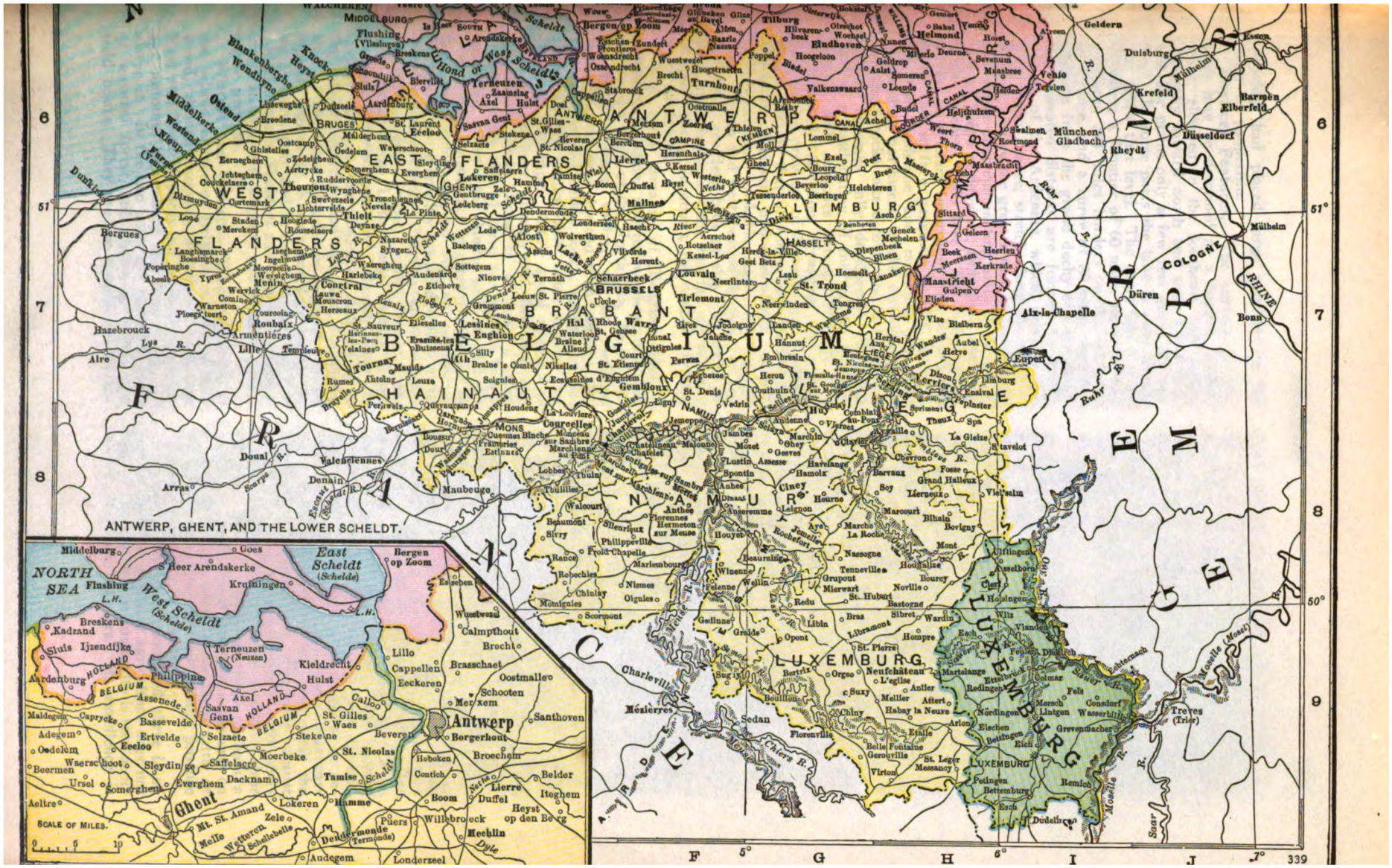
The populations of the principal towns in 1912 were:

| | | | |
|---|---|---|---|
| Brussels | 663,647 | Seraing | 41,833 |
| Antwerp | 312,884 | Tournai | 37,349 |
| Liége | 170,634 | Courtrai | 36,029 |
| Ghent | 167,477 | Alost | 35,603 |
| Malines | 59,735 | Saint Nicolas | 35,128 |
| Bruges | 53,635 | Namur | 32,453 |
| Verviers | 45,964 | Charleroi | 29,452 |
| Ostend | 43,002 | Mons | 27,805 |
| Louvain | 42,482 | | |

The last census, taken 31 Dec. 1910, placed the population at 7,423,784; the above official estimate reveals an increase of 147,603 in two years. The 1912 figures gave 3,756,872 males; 3,814,505 females. Excluding infants, the census (1910) showed that 2,833,334 spoke only French; 3,220,662 only Flemish; 31,415 only German; 871,288 both French and Flemish; 74,993 both French and German; 8,652 German and Flemish; and 52,547 who were conversant with all three languages. At the same time there were 254,547 foreigners residing in Belgium, distributed as follows: French, 80,765; Dutch, 70,950; Germans, 57,010; Luxemburgers, 10,367; Russians, 7,491; British, 6,974; Austro-Hungarians, 5,927; Italians, 4,498; Swiss, 2,335, and 8,238 of other nationalities. Statistics of Belgian emigration show 13,492 in 1900; 14,752 in 1904; in 1908 these figures were more than doubled, namely, 32,294; in 1909 there were 38,190 and in 1912 a total of 35,775. The immigration of foreigners into Belgium, on the other hand, exceeded the emigration of the natives to other countries. The latest available figures are: in 1910, 44,950; in 1911, 41,062; and 42,980 in 1912. The majority of the population is Roman Catholic, but as no inquiries on the subject of religious belief are made in the census enumeration, there are no figures available to show the distribution of creeds. The government impartially subsidizes Roman Catholic, Protestant and Jewish places of worship by contributing to the stipends of ministers. So far back as 1831, when religious tolerance was still an almost unknown quantity in Europe, the Belgian Congress made freedom of conscience and religious equality fundamental parts of their Constitution. The Belgian population is the densest in Europe and is composed of two distinct races — Flemish, who are of German, and Walloons, who are of French extraction. The former, by far the more numerous, have their principal locality in Flanders; but also prevail throughout Antwerp, Limburg and part of Brabant. The latter are found chiefly in Hainaut, Liége, Namur and part of Luxemburg. The language of each corresponds with their origin — the Flemings speaking a Germanic dialect and the Walloons a dialect, or rather a corruption, of French, with a considerable infusion of words and phrases from Spanish and other languages. This distinct mixture of races, and the repeated changes of masters to which they have been subjected, have necessarily been very unfavorable to the formation of a national character. Still, in some leading features, there is a remarkable uniformity in the population. Though the position of the country between France and Germany has made it the battlefield of Europe, the inhabitants show few warlike tendencies and are unwearied in pursuing arts of peace. The fact bears strong testimony to the patient endurance of the Belgian people, but does not, as the European War has shown, preclude the courage or the ability to fight when called on. French is the official language of Belgium and in general use among the educated classes. Of late years, however, patriotic feelings have acquired new strength; and one of its first manifestations has been an eager desire to cultivate the vernacular Flemish, which differs little from Dutch.

The population generally is industrious and apparently in comfortable circumstances. The far larger proportion of it is rural; and though landed property is very much subdivided, the Belgians manage, by a happy combination of agricultural with other industrial employments, to derive from their little holdings all the necessaries and not a few of the comforts of life. It is not to be denied, however, that in some of the provinces, particularly in Flanders, population, in so far at least as it can be maintained by agricultural resources, had reached its limit and that a deficiency of other employment, particularly spinning and hand-loom


AMSTERDAM AND ITS ENVIRONS.
SCALE OF MILES.
0 1 2 3 4
Zaandam
Ilpendam
Monnickendam
Goud Sea
Den Ilp
Oostzaan
Watergang
Broek in Waterland
Landsmeer
Uitdam
Het Schouw
Holysloot
Zunderdorp
Ransdorp
Nieuwendam
Schellingwoude
Durgerdam
Light House
Ft. Pampus
Watergraafsmeer
Diemen
Light House
Diemerdam
Osdorp
De Overtoom
Sloten
Buitenveldert
Duivendrecht
Diemerbrug
Muiden
Weesp
Ouderkerk
Amstel
Vecht R.
Amsterdam
NETHERLANDS
BELGIUM AND
LUXEMBURG
SCALES
Statute Miles, 25.5 = 1 Inch.
Kilometers, 41 = 1 Inch.
Rand McNally & Co.'s New 11 x 14 Map of Netherlands, Belgium & Luxemburg
Copyright by Rand, McNally & Co.
Longitude East from Greenwich
NORDERNEY
JUIST
MEMMERT SAND
BORKUM
FRISIAN ISLANDS
SCHIERMONNIKOOG
AMELAND
TERSCHELLING
WEST TERSCHELLING
VLIELAND
TEXEL
Vlie Strom
East Vlieland
Eijerlandsche Gat
Oosterend
Boorn
Hollum
Ballum
Pieterburen
Roode Schoot
Dokkum
Metslawier
Holwerd
Schiermonnikoog
Pesens
Uithuizen
Loppersum
Appingedam
Delfzijl
Uithuizermeeden
Uithuizermeedenveer
Warffum
Baflo
Usquert
Uitwierde
Uitwierdermeede
Uitwierdermeedeveer
Usquerdermeede
Usquerdermeedeveer
Kloosterburen
Zoutkamp
Reitdiep
Groningen
Slochteren
Finsterwolde
Winschoten
Sappemeer
Hoogezand
Veendam
Pekela
Wildervank
Stadskanaal
Ter Apel
Westerwolde
Gieten
Zuidlaren
Norg
Donkerbroek
Gasselte
Assen
Borger
Hooghalen
Bellen
Westerbork
Onnen
Emmen
Sleen
Coevorden
Zwolle
Ruinen
Dwingelo
Steenwijkerwold
Steenwijk
Giethoorn
Ruinerwold
Meppel
Vollenhove
Hoogeveen
Dalen
Koevorden
Harderberg
Nieuweschans
Ommen
Hasselt
Kampen
IJsselmuiden
Genemuiden
Zwartsluis
Staphorst
Dedemsvaart
Hardenberg
Nieuwleusen
Vechte R.
Dedemsvaart Canal
Overijsselsche Canal
Almelo
Oldenzaal
Borne
Denekamp
Weerselo
Enschede
Losser
Lonneker
Hengelo
Holten
Deventer
Diepenveen
Olst
Wijhe
Zutphen
Lochem
Borkulo
Ellergerd
Steenderen
Dieren
Loenen
Otterlo
Eede
Apeldoorn
Voorst
Gorssel
Schipbeek
Markelo
Gorr
Zwolle
Hattem
Oldebroek
Elburg
Doornspijk
Nunspeet
Harderwijk
Epe
Vaassen
Ermelo
Putten
Garderen
Het Leo
Nijkerk
Barneveld
Beekbergen
Brummen
Voorthuizen
Leuvenum
Hierden
Harskamp
Ede
Wageningen
Renkum
Oosterbeek
Arnhem
Velp
Rheden
Doesburg
Zelhem
Groenlo
Doetinchem
Didam
Duiven
Westervoort
Zevenaar
Terborg
Asselt
Gendringen
Dinxperlo
Winterswijk
Aalten
Elst
Bemmel
Lobith
Tiel
Culemborg
Zaltbommel
Druten
Wamel
Dreumel
Nijmegen
Ravenstein
Oss
Uden
Veghel
Schaijk
Grave
Mill
Boxmeer
Cuijk
Gennep
Kleve
Huissen
Ochten
Dodewaard
Opheusden
Zetten
Rhenen
Wageningen
Ede
Veenendaal
Amerongen
Driebergen
Woudenberg
Utrecht
Zeist
Bilthoven
Soestdijk
Baarn
Soest
Hilversum
Naarden
Muiden
Weesp
Amstelveen
Amstelveen
Amsterdam
Haarlem
Zandvoort
Vogelenzang
Bloemendaal
Beverwijk
Velsen
Ijmuiden
Wijk-aan-Zee en Duin
Egmond aan Zee
Castricum
Uitgeest
Zaandam
Edam
Purmerend
Marken
Monnickendam
Ransdorp
Alkmaar
Bergen
Petten
Camp
Winkel
Schoorl
Berkhout
Avenhorn
Koedijk
Oudesluis
Schagen
Barsingerhorn
Medemblik
Wervershof
Enkhuizen
Wognum
Hoorn
Calandscoog
Wieringen
Huisduinen
Helder
Onrust
Den Helder
Oudeschild
Den Burg
Texel
De Cocksdorp
Koog
Burg
Hoorn
Workum
Hindeloopen
Molkwerum
Stavoren
Lemmer
Balk
Sloten
Joure
Heerenveen
Tjeukemeer
Sloterplas
Tjonger Canal
Appelscha
Wolvega
Vledder
Pepergat
Steenwijk
Steenwijkerwold
Giethoorn
Vollenhove
Meppel
Ruinerwold
Hasselt
Kampen
IJsselmuiden
Genemuiden
Zwartsluis
Staphorst
Dedemsvaart
Hardenberg
Nieuwleusen
Omm


ANTWERP, GHENT, AND THE LOWER SCHELDT.
NORTH SEA
Middelburg
Flushing
Vlissingen
Veere
Goes
Arendskerke
Kruiningen
East Scheldt (Schelde)
Bergen op Zoom
West Scheldt (Schelde)
Breskens
Kadzand
Sluis
IJzendijke
Terneuzen (Neuzen)
Philippine
Aardenburg
Kieldrecht
Hulst
Axel
Sasvan Gent
Assenede
Maldegem
Caprycke
Adegem
Ertvelde
Oedelem
Eecloo
Sleydinge
Beermen
Waerschoot
Ursel
Somerghem
Everghem
Dacknam
Aeltre
Ghent
Mt. St. Amand
Zele
Lokeren
Hamme
Tamise
Scheldt
Saffelaere
Moerbeke
St. Nicolas
Beveren
Stekene
Waes
St. Gilles
Calloo
Lillo
Cappellen
Eeckeren
Brasschaet
Calmpthout
Brecht
Ostmalle
Schooten
Merxem
Antwerp
Santhoven
Borgerhout
Broechem
Hoboken
Contich
Belder
Lierre
Duffel
Boom
Itegheim
Heyst op den Berg
Willebroeck
Mechlin
Dyle
Londerzeel
Audegem
Denderm onde (Termonde)
Puers
Zele
Wetteren
Schellebelle
Melle
SCALE OF MILES.
0 5 10
Wesel
Krefeld
Duisburg
Barmen
Elberfeld
Düsseldorf
Rheydt
München-Gladbach
Mülheim
Cologne
Düren
Bonn
Aix-la-Chapelle
Eupen
Malmedy
Spa
Stavelot
Verviers
Liège
Huy
Namur
Dinant
Charleroi
Mons
Tournay
Lille
Roubaix
Armentières
Hazebrouck
Dunkirk
Ostend
Middelkerke
Bruges
Ghent
Courtrai
Ypres
Menin
Thielt
Oudenarde
Alost
Brussels
Louvain
Malines
Antwerp
Turnhout
Eindhoven
Helmond
Tilburg
Hasselt
Maastricht
Liège
Limburg
Luxemburg
Arlon
Neufchâteau
Bastogne
Virton
Longwy
Sedan
Mézières
Charleville
Rocroi
Maubeuge
Valenciennes
Douai
Arras
Calais
Boulogne
Ardres
Gravelines
Dunkirk
Treves (Trier)
Saarbrücken
Metz
Thionville
Diedenhofen
Sarrelouis
Saarbrücken
Trier
Coblenz
Bingen
Mainz
Worms
Mannheim
Heidelberg
Karlsruhe
Strassburg
Metz
Nancy
Toul
Verdun
Rheims
Sedan
Mézières
Charleville
Hirson
Avesnes
Maubeuge
Valenciennes
Douai
Arras
Lille
Roubaix
Tourcoing
Menin
Ypres
Dunkirk
Calais
Boulogne
Abbeville
Amiens
Peronne
St. Quentin
Laon
Soissons
Rheims
Chalons
Vitry
Bar-le-Duc
Commercy
Toul
Nancy
Epinal
Remiremont
Belfort
Mülhausen
Colmar
Schlettstadt
Strassburg
Saverne
Zabern
Pfalzburg
Metz
Thionville
Diedenhofen
Sarrelouis
Saarbrücken
Trier
Coblenz
Bingen
Mainz
Worms
Mannheim
Heidelberg
Karlsruhe
Strassburg
Metz
Nancy
Toul
Verdun
Rheims
Sedan
Mézières
Charleville
Hirson
Avesnes
Maubeuge
Valenciennes
Douai
Arras
Lille
Roubaix
Tourcoing
Menin
Ypres
Dunkirk
Calais
Boulogne
Abbeville
Amiens
Peronne
St. Quentin
Laon
Soissons
Rheims
Chalons
Vitry
Bar-le-Duc
Commercy
Toul
Nancy
Epinal
Remiremont
Belfort
Mülhausen
Colmar
Schlettstadt
Strassburg
Saverne
Zabern
Pfalzburg
5°
6°
7°
F
G
H
I
J
339

weaving, had placed large numbers on the verge of pauperism.

**Physical Features.**— The surface of Belgium may be described as a rugged, inclined plane, elevated in the southeast and sloping gradually toward north and west till it sinks into low plains only a few feet above the sea-level. In some parts the land is even several feet below that level. The coast line is about 42 miles; a frontier of 60 miles faces German territory; 384 miles borders on the northeast of France, and a curve of 80 miles separates Belgium from the grand duchy of Luxemburg. The elevated districts are formed by ramifications of the Ardennes, which, entering Belgium from France, stretch along the south of Namur, occupy the greater part of Luxemburg, and attain their culminating point in the southeast of Liége at Stavelot, near Spa, where the height exceeds 2,000 feet. The rocks appear to rest on primary formations; but those which reach the surface generally consist of slate, old red sandstone and mountain limestone. Proceeding northwest, in the direction of the dip, these rocks take a cover and the coal formation becomes fully developed. This coal field is a continuation of that of the north of France and stretches through Belgium in a northeasterly direction, occupying the greater part of the province of Hainaut and a considerable part of that of Liége, and skirting the provinces of Namur and Luxemburg. It contains numerous workable seams of coal and iron. North and west, beyond the limits of this coal field, are deep beds of clay and sand. In parts the clay is suitable for the manufacture of fine pottery; in others, for coarser earthenware or bricks.

The main streams of Belgium have a northern direction; and the whole country lies within the basin of the North Sea. In the elevated and broken surface of the southeast numerous torrents descend with rapidity; becoming confined within rocky, precipitous and richly-wooded banks, they often furnish enchanting landscapes. Their speed slackens on reaching the lower country and their augmented volume flows along in a slow, winding course. Only two of them are entitled to the name of rivers — the Meuse and the Scheldt — and their importance is greatly enhanced by numerous tributaries, so that no country in Europe is more lavishly provided with internal water communication. Other navigable streams are the Ambleve, Demer, Dender, Darme, Dyle, Lys, Great Nethe, Little Nethe, Ourthe, Rupel, Sambre, Yperlee and Yser. Though subject to sudden changes, the climate of Belgium is on the whole temperate and agreeable, resembling that of the same latitudes in England. In the higher regions of Namur and Luxemburg the air is keen, pure and healthy; on the low flats which occur in Flanders and over the reclaimed tracts in Antwerp, a humid and sluggish atmosphere prevails.

**Woods and Forests.**— Nearly one-fifth of the whole surface of Belgium is covered with wood, though unequally distributed. Whereas East and West Flanders fall far below the average amount, Luxemburg and Namur rise far above it. In the two latter are extensive tracts of natural forest, still sheltering wolves and wild boars. They are the remains of the ancient forest of Ardennes which Cæsar described as stretching far out into France from the banks of the Rhine. They yield large quantities of valuable hard wood, principally oak. By the most scientific methods of sylviculture and unremitting industry the Belgians exploit these natural resources to their fullest capacity. The total value of timber produced annually is about 22,000,000 francs ($4,400,000). The less valuable grades of wood are converted into charcoal and the bark is largely exported to England.

**Agriculture.**— It would be more appropriate, in describing the trade, commerce and domestic industries of Belgium, to employ the past tense in all verbs. At the present moment, 1917, Belgium is a devastated, war-ravaged land, bleeding under the heel of an invader; her commerce and industries have vanished; her former prosperity no longer exists: fire, destitution and starvation have taken its place. The physical — if not the spiritual — activities of Belgium to-day are one with those of Nineveh and Tyre. Hence the following chapters on the life and labor of the Belgian people should be read — for the time being, at least — as a record of things that once were; of the brighter days before the plow and the artisan's tools yielded to the overwhelming strength of cannon and bayonet.

The greater part of Belgium is well adapted for agriculture and the inhabitants had so industriously availed themselves of their natural advantages that they were regarded as the model farmers of Europe. Those parts where climate and soil were unfavorable for raising crops have been converted into pasturages. Here is raised a hardy breed of horses admirably adapted for light cavalry and largely exported to France for that purpose, while vast herds of swine are fed almost at no expense on the mast of the forests. No part of the arable soil is allowed to lie waste, but is carefully applied to its appropriate uses. Vineyards adorn the sunny slopes and an inferior kind of tobacco is raised in the Ardennes valleys. In the province of Antwerp and partly in that of Limburg occurs a vast, dreary expanse of moorland waste known as the Campine, composed mainly of barren sand, and apparently destined to remain forever in its wild, natural state. Yet wherever a patch of more promising appearance occurs, the hand of industry has transformed it into corn fields and green pastures. Agricultural colonies, partly free and partly compulsory, have been planted in different parts of the district. The former consist of persons generally in poor circumstances who have voluntarily engaged in reclaiming barren tracts as the means of procuring a maintenance and saving them from the degradation of pauperism. The latter consist of convicts, who, having forfeited their liberty, give compulsory labor as the penalty of their offenses. By the united exertions of both a wondrous improvement has been made and on parts of this waste some of the finest cattle of the country are raised and much dairy produce of excellent quality is obtained.

Beyond the districts mentioned, there is no part of Belgium in which agriculture does not flourish; but the skill in husbandry is seen at its best in the two Flanders. Its excellence is

due entirely to an innate spirit of economy and industry — an economy which carefully appropriates every gain, however small, and an industry which grudges no labor, however great, provided it is possible, by the application of it, to obtain an additional amount of valuable produce. In fact, the Flemish husbandry partakes more of the nature of garden than of field culture. In many of its operations, no doubt, horse labor is employed. The plow and the harrow are in frequent requisition, but the implement on which the greatest dependence is placed is the earliest and simplest of all — the spade. To give full scope for the use of it, the ground is parceled out into small fields of a square form, which have their highest point in the centre and slope gently from it in all directions toward the sides, where ditches of sufficient size carry off the superfluous water as it filters into them. To promote this filtration the ground is trenched to a uniform depth, so that the slope of the subsoil corresponds as nearly as possible to that of the surface. In performing this trenching a considerable degree of skill and ingenuity is displayed. The performance of the whole at once would be a formidable and not a very efficient process. In a few years a new subsoil would be formed and the trenching would require to be renewed. This is rendered unnecessary in the following manner: The land is laid out in ridges about five feet wide and when the seed is sown it is not covered as usual by the harrow, but by earth dug from the furrows to the depth of two spits and spread evenly over the surface. By changing the ridges and throwing the furrow of the previous year into the ridge of the next the whole ground becomes furrow in the course of five successive crops and is consequently trenched to the depth of about 18 inches. This process of trenching never ceases and is unquestionably one of the most important characteristics of the Flemish husbandry.

The only other process particularly deserving of notice is the care and skill manifested in securing an adequate supply of manure. Every farm is fully stocked and the cattle, instead of being grazed in the fields, are fed at home, in winter on turnips and other roots and in the summer on green crops carefully arranged so as to come forward in regular succession and yield a full supply of rich, succulent food. In addition to this every homestead has a tank, built and generally arched with brick, into which all the liquids of the cattle sheds are conveyed and have their fertilizing properties increased by the dissolution of large quantities of rape cake. This liquid manure is of singular efficacy in promoting the growth of flax, which enters regularly into the Flemish rotation and is perhaps the most valuable crop of all. As this crop is one of the most exhausting which can be grown and requires the richest manure, while it yields none, the growth of it to any great extent must, without the aid of the tank, have been impossible.

About two-thirds of the whole kingdom is under cultivation and nearly eight-ninths profitably occupied, leaving only about one-ninth waste. Of this last the far greater part belongs to the comparatively barren districts of the southeast and northeast; and hence, in the more favored provinces, particularly those of Brabant, the two Flanders and Hainaut, the quantity of waste is so very small that the whole surface may be regarded as one vast garden. Considerable attention has been paid to the raising of stock and the breeds both of cattle and horses are of a superior description. The horses of Flanders in particular are admirably suited for draught and an infusion of their blood has contributed not a little to form the magnificent teams of the London draymen. In general, however, Belgian stock of all kinds is inferior to that of England. Every province has an agricultural commission and a special council to advise the government on all questions of national industries.

**Mines.**— The mineral riches of Belgium are great and, after agriculture, form the most important of her national interests. They are almost entirely confined to the four provinces of Hainaut, Liége, Namur and Luxemburg, and consist of lead, manganese, calamine or zinc, iron and coal. The lead is wrought to some extent at Vedrin, in Liége; but the quantity obtained forms only a small part of the actual consumption. Manganese, well known for its important bleaching properties, is obtained both in Liége and Namur. The principal field of calamine is at Liége, where it is worked to an extent which not only supplies the home demand, but leaves a large surplus for export. All these minerals, however, are insignificant compared with those of iron and coal. The former has its seat in the country between the Sambre and the Meuse and also in the province of Liége. The largest quantity of ore is mined in that of Namur. The coal field, already described, has an area of above 500 square miles. The export is about 5,000,000 tons, forming one of the largest and most valuable of all the Belgian exports. Nearly the whole of the coal thus exported is taken by France. There cannot be a doubt that this export adds largely to the national wealth; but a question has been raised as to the policy of thus lavishly disposing of a raw material which is absolutely essential to the existence of a manufacturing community, and the quantity of which, though great, is by no means inexhaustible. One obvious effect of the great foreign demand is to raise the price and thus place some of the most important manufacturing interests of the country in an unfavorable position for competing successfully with so formidable a rival as Great Britain. Besides minerals, properly so called, Belgium is abundantly supplied with building stone, pavement, limestone, roofing slate and marble. Of the last, the black marble of Dinant is the most celebrated.

**Manufactures.**— The industrial products of Belgium are very numerous and the superiority of many of them to those of most other countries is confessed. The fine linens of Flanders and lace of Brabant are of European reputation. Scarcely less celebrated are the carpets and porcelain of Tournay, the cloth of Verviers, the extensive foundries, machine works and other iron and steel establishments of Liége, Seraing and other places. The cotton and woolen manufactures, confined chiefly to Flanders and the province of Antwerp, have advanced greatly. Other manufactures include silks, glass and glassware, hosiery, paper, beet sugar, beer. There were 17 pig-iron works in

operation in 1912; 39 iron manufactories; 29 steel works; besides 89 sugar factories; 21 refineries and 125 distilleries. There were also over 600 fishing vessels.

**Trade and Commerce.**— The geographical position, the admirable facilities of transport and the indefatigable industry of the inhabitants early combined to place Belgium at the very head of the trading countries of Europe. The gradual rise of competitors still more highly favored has deprived her of this pre-eminence, and with the limited extent of her seacoast it is not to be expected that she can ever take high rank as a naval state; but her trade is still of great importance and within recent years has made a rapid advance. Her coal and iron and the numerous products of her manufactures furnish in themselves the materials of extensive traffic; while the possession of one of the best harbors in the world (Antwerp), situated on a magnificent river, which directly, or by canals, stretches its arms into every part of the kingdom, and now made accessible by a system of railways with every kingdom of central Europe, naturally renders Belgium the seat of a transit trade even more important than that which it monopolized during the Middle Ages. This she owes chiefly to the admirable system of railway communication which, in the exercise of an enlightened policy, was early established throughout the kingdom. This system has its centre at Malines, from which a line proceeds north to Antwerp; another west to Ostend; another southwest through Mons and on to the Northern Railroad of France, which communicates directly with Paris, and another southeast to Liége, and on into Prussia, where it first communicates with the Rhine at Cologne, and thence by that river and by rail gains access both east and south to all the countries of central Europe. In addition to these great trunks, one important branch connects Liége with Namur and Mons; and another from Antwerp, after crossing the west trunk at Ghent, passes Courtrai, and proceeds directly toward Lille. The ramification is thus complete; and there is not a town in Belgium of any importance which may not now, with the utmost facility, convey the products of its industry by the safest and speediest of all means of transport. The railways have a length of 5,401 miles, of which 2,708 are state-owned; private lines, 190 miles, and 2,503 miles of light railways. In 1911 the navigable rivers and canals had a total length of 1,238 miles. The value of the general commerce in 1913 was $1,632,090,000, of which sum $916,725,000 represented imports and $715,365,000 exports. Germany, France and Great Britain respectively were Belgium's best customers.

The articles of import for home consumption include grain and flour, raw cotton, wool, hides, coffee, tobacco, chemicals, oil-seeds, yarn, timber, petroleum, etc. The exports are principally coal, yarn (chiefly linen and woolen), cereals, machinery, flax, woolens and cottons, chemicals, steel and iron, glass and glassware, sugar (raw and refined), zinc, manure, eggs, etc. The trade with Great Britain has grown considerably of late years, the chief exports being silks, woolen yarn, cottons, flax, glass, eggs; the chief imports cottons, woolens, raw cotton, metals and machinery. The external trade is chiefly carried on by means of foreign (British) vessels and the great bulk of the shipping enters and clears from the port of Antwerp. The total burden of the Belgian mercantile marine is over 180,000 tons. Important results are expected from the *Association Belgo-Hollandaise*, an international association of Belgian and Dutch manufacturers and business men founded in 1903 to effect a closer commercial union between the two countries. The trade with the United States is important, Belgium being classed as fifth in the value of its imports from this country and seventh in the exports it sends hither.

**Education.**— As already stated, almost the entire population of Belgium adheres to the Roman Catholic Church. Protestantism, though fully tolerated and recognized, does not count more than a mere fraction of the people among its adherents. For nearly a century there has raged an incessant struggle over the question of education between the Clerical party on the one side and the Liberal on the other. During numerous political crises the Socialists have thrown their weight into the scale against the Clericals. The position of the Church toward the state is based on the Constitution and certain unrepealed laws dating back to 1802. By the former absolute freedom is decreed, no compulsion in regard to religious observances, no state interference with appointment of ministers, all religious marriage ceremonies to be preceded by a civil marriage and salaries of ministers of all creeds to be defrayed by the state. By the older law provincial councils were to provide for the maintenance of cathedrals, episcopal palaces and diocesan seminaries, and the state to provide funds for the construction of churches and the expenses of religious services. At various intervals these prescriptions have been altered to meet modern conditions, Belgium being no longer a French possession, as she was at the time those laws were passed. During the first decade of Belgian independence the Catholics had gathered the whole educational system into their hands, when the Liberals began to raise their voices. A compromise was effected between the parties by the Education Act of 1842, by which religious teaching became obligatory in elementary schools, with a contracting-out provision for children of other beliefs. This arrangement worked smoothly for the next 25 years, during which the Catholic party appropriated ever-increasing sums for the up-keep of "official" schools, and matters came to a climax with the fall of the Catholic ministry in 1878. Radicals, Freemasons and Socialists united to secularize education; the power of appointing teachers passed into their hands, and anti-clericalists were frequently chosen. The new ministry created a Department of Public Instruction on the basis that public education "must depend exclusively on the civil authorities." An education bill was introduced in 1879 aiming at the abolition of religious instruction and substituting therefor a "universal morality." The measure provoked violent opposition; many thousands signed petitions of protest to Parliament; the intervention of the Pope was solicited, but the ministry remained obdurate and the bill became law. M. Frère-Orban, the Premier, severed diplomatic relations with the Vatican; the Belgian bishops prohibited Catholic children from attending the schools and

Catholic teachers from giving instruction in them. Thousands of teachers and children dropped out of the schools, and new school buildings were speedily erected by public subscriptions, the artisans giving their services free to the task. Within a year the Catholics had established over 2,000 free schools with close on 9,000 teachers, while the state schools had lost more than half of their pupils. Though resorting to all kinds of tyrannical devices the government was unable to force parents to send their children; even lavish offers of prizes and clothing failed to produce the desired effect. A government commission of inquiry proved equally futile, and the Liberal ministry suffered a crushing defeat in the elections of 1884.

On their return to power the Catholics repealed the education bill and restored the old system with additional improvements. Stormy scenes were enacted in the chamber. At the ensuing communal elections the Liberals received increased majorities and claimed that public opinion was on their side. Yielding to the clamor the King dismissed his leading ministers and peace was, for the time being, restored. Since then the Catholic party has remained in power, revising the educational code in 1895, 1911 and, finally, introducing compulsory education in 1913. But the conflict over religious or secular education has never been definitely decided. Up to the outbreak of the war the schools were performing valuable service, and the high rate of illiteracy was rapidly diminishing. At the census of 1890 nearly 27 per cent of the population above 15 years of age could neither read nor write; in 1913 it had fallen to slightly over 3 per cent. Colleges and middle-class schools have been established, where a superior education may be obtained. A complete course for the learned profession is provided by four universities, two of them at Ghent and Liége respectively, established and supported by the state; one at Brussels, called the Free University, founded by voluntary association; and one at Louvain, called the Catholic University, controlled by the clergy.

**Newspapers and Literature.**— There were 2,245 newspapers in Belgium in 1911; of these 112 were daily and 1,061 weekly papers, and 1,072 others. The Belgian newspaper press is not highly spoken of by those who know it best. Baron d'Anethan, then Prime Minister, told the Senate in 1870 that the management of native newspapers was in the hands of strangers, as were also, in great part, their editorial departments. "People are falsely led," he stated, "to consider the language of the newspapers an expression of public opinion. Their language causes sentiments and preferences which are not ours to be attributed to us in foreign countries." As but few Belgian newspapers make enough profit to pay their way, most of them call themselves organs of this or that political party. While many have a right to make this claim there are others with large foreign circulations which are — or at least were — merely the mouthpieces of foreign governments and not by any means friendly to Belgium. After the Franco-Prussian War French journalists swarmed into the country and gained control of many papers, using their power in a manner calculated to injure Belgian interests. In recent years a number of journalists, "neither Belgian by birth nor adoption, obtained control of journals considered important outside Belgium." It is stated by one authority (J. de C. MacDonnell, 'Belgium, Her Kings, Kingdom and People') that these journalistic intruders "were mercenaries in the pay of England's enemies, and succeeded in damaging Belgium as well as England by violently upholding what they pretended to be Belgian causes, and attacking England as the foe of Belgium." This statement was written the year before the war, 1913.

Belgian literature, regarded from a national point of view, is a very modern creation dating from the erection of Belgium as an independent kingdom in 1830. But a purely *Flemish* literature has existed since the 13th century, when that language and the Walloon dialect were spoken throughout the Low Countries. (See FLEMISH LANGUAGE AND LITERATURE). After the separation from Holland (1830) a strong sentiment of nationality arose in Belgium, together with a desire to break away from Dutch traditions. The Flemish language was revived and a literary renascence inaugurated under the leadership of Jan Frans Willems, a freethinker, and the Abbé David, a clergyman. This strange combination worked separately for the same object, and each founded a society to promote it. The memory of both is still honored by two literary funds bearing their respective names. At the death of Willems in 1846, his mantle fell upon Henri Conscience, a romantic story-writer. Though his tales were of a somewhat childish nature, it is said that he "retaught his countrymen to read." The publication of his 'De Leeuv van Vlanderen' (The Lion of Flanders), gave an enormous stimulant to the literary renascence, which has grown and flourished in Belgium to this day. Quite a number of Belgian authors write in French; the most celebrated of these is Maurice Maeterlinck (q.v.). The modern school of Belgian writers have largely emancipated themselves from the powerful influence of French style and form and created a distinct type of literature purely national in spirit and atmosphere. The strongest incentive to the "emancipation movement" was given in 1846 by the poet Ledeganck, who protested against neglecting the national character and language for those of another country. Belgian authors cover the whole field of literary activity — history, biography, philosophy, economics, poetry, fiction, drama and *belles-lettres*. Louis Gachard (d. 1885) wrote 16th century history; Charles Rahlenbeck (d. 1903) published a history of Protestantism in Belgium; Baron Kervyn de Lettenhove wrote a big history of Flanders; Alphonse Wauters was a famous archæologist; Emile de Lavaleye was a learned exponent of economics; F. A. Gevært wrote a history and theory of ancient music; Joseph Delbœuf was celebrated for his writings on psychology; Baron de Gerlache wrote a history of the Netherlands; Ernest Nys is recognized as an expert on international law; Georges Rodenbach was the author of that well-known work 'Bruges la Morte'; the Abbé David already referred to wrote a history of Belgium in Flemish; van Rijswijck was a patriotic song writer in the vernacular; Jan Sleeckx was a renowned dramatist, novelist and literary critic; among dramatists and poets may also be mentioned Charles van Lerberghe,

Max Elskamp, Albert Giraud, Jan van Beers, Prudens van Duyse, Edmond Picard, Edouard Smits, Julius de Geyter, André van Hasselt, Julius Vuylsteke, Ivan Gilkin, Charles Potvin, Emmanuel Hiel, the world-renowned Emil Verhaeren and a host of others. M. Henry Carton de Wiart, Belgian Minister of Justice, is a famous novelist whose masterpiece, 'Cité Ardente,' should be read by lovers of beautiful (French) prose. There are many learned societies in Belgium, archæological, historical and scientific. The Belgian Academy, which is modelled on the lines of the Académie Française, has performed most valuable services in the propagation and encouragement of useful knowledge in Belgium. A number of literary reviews, written and published by Belgians, attain a high standard of excellence that is quite comparable with their French and Dutch contemporaries.

**Defense.**— The question of national defense had long been a knotty problem in Belgium and it was not until 1913 — on the eve of the war — that Baron de Broqueville, the Prime Minister, carried an army bill through Parliament involving compulsory service. Already in 1890 the question of obligatory service had assumed an acute form, when the government categorically refused to introduce that system, notwithstanding that it met with general favor from the Liberal party and the working classes generally, and was, besides, strongly supported by all native competent authorities. At that time Lieutenant-General Van der Smissen, one of the ablest Belgian officers seized the first available opportunity to express openly and loudly his formal disapproval of the conduct of the Minister of War, General Pontus, on the subject of personal service. For this freedom of speech the general was promptly dismissed, a circumstance that was regarded as a great loss to the Belgian army. The bill of 1913 called all young Belgians who were physically fit to serve in the army, which would have doubled its nominal strength and raised the number of effectives to 300,000 men. But the measure arrived too late; the war clouds burst over the country before the reforms were carried out. The total available was 263,000, of which number nearly half were required to garrison the fortifications, leaving only 133,000 for service in the field. To bring the latter force up to the necessary strength the government had perforce to call up the old Civic National Guard. At the outbreak of the Franco-Prussian War in 1870 the Belgian army was immediately placed on a war footing, and undoubtedly saved the country from once more being "the battle-field of Europe." It is an open secret that the French, on the eve of Sedan, meditated a raid through Belgium; the Emperor Napoleon III was only prevented from taking the step when one of his generals pointed out that it would mean 70,000 more enemies for France. Under the old law of 1902 the Belgian army was recruited by voluntary enlistment augmented, in case of necessity, by annual levies of young men who had completed their 19th year. Anyone unwilling to serve might provide a substitute, for which, of course, he would have to pay. The period of service was fixed at eight years with the colors and five years in the reserve. About 14,000 men were required annually, while the war strength was calculated at 180,000. While the new law of 1913 retains the same legal period of service, it drafts about half of the number of the total available. The men receive an excellent, all-round training, having to serve in all the branches in rotation, viz., infantry, fortress artillery, engineers, field artillery and cavalry. Besides the standing army there is a *garde civique*, numbering close on 50,000 men in time of peace, in addition to which there were over 90,000 non-active men belonging to this force. Belgium has no navy beyond a small flotilla of gunboats for river and coast service.

The principal means of defense to which the Belgians had long pinned their faith was the elaborate system of fortifications that guarded their frontiers. These forts were destined, in the early stage of the European War in 1914, to play a prominent and instructive part. On the one hand, they stemmed the German invading avalanche for a week; on the other, they proved the utter uselessness of fortifications against modern artillery if the enemy is once permitted to approach within range. Ever since Belgium had gained her independence, plans for fortified defenses had engaged the attention of her best military engineers. The first proposal was laid before a military committee by General Chazel in 1845. Besides a reorganization of the army, he advocated the demolition of existing defenses that were in the wrong places, and the establishment of powerful entrenchments at Antwerp. Years later, when the plans were about to be put into execution, Napoleon III, who had climbed to power in the interim, vetoed the plan on the ground that he might some day be obliged to enter Belgium himself, in which case the forts it was proposed to demolish would be his last support. It was not till four years after the close of the Franco-Prussian War, when Brialmont became inspector-general of fortifications, and Napoleon had fallen, that the task was begun. He had already fortified Antwerp in 1868; by 1892 he had completed the forts at Liége and Namur. In his designs he broke away from the old French star-shaped forts with bastioned ramparts and adopted the German type of long front and detached forts. Before the advent of artillery, forts were high as castles; thereafter they were made as low as possible, burrowing underground, and showing only a mound hardly visible, cased and roofed in concrete and covered with earth. The guns within were of the "disappearing" type, which were raised just high enough to "peep" over the level, fire and sink out of sight again. The sections between the forts were supposed to be provided with infantry and artillery trenches, but this most important point was apparently overlooked, and thus the passages between the forts were left undefended against night attacks by infantry. Liége was defended by 12 forts, six main and six smaller ones, called *fortins*; between two of them lay an undefended gap of five or six miles, presenting an open entrance to the Dutch frontier.* Across the Meuse, to the southeast, was Fort Barchon and Fortin Evegnée; farther south stood Fort Fléron, which commanded one of the railroad lines to Aix; the

* The German attack on Visé was directed against this gap; by forcing it they could have avoided all the other Liége forts.

two *fortins* Chaudfontaine and Embourg, on opposite banks of the Vesdre, controlled the line to Germany via Verviers; Fort Boncelles to the west commanded the elevated ground between the Meuse and the Ourthe; while north of Boncelles stood Forts Flemalle, Hollogne and Loncin, and between the latter and Pontisse lay two more *fortins*, Lantin and Liers. This irregular circle around Liége was considered a safe, double line of defense; the forts being from 4,000 to 7,000 yards apart toward the German frontier, an enemy would still be under fire from right and left even if a fort fell into his hands. As it happened in actual experience, in 1914, by the capture of Fort Loncin, a vital spot, by the Germans, the whole railway system of Belgium was laid open to the invading forces, and the fall of Namur and Antwerp (neither of which could hinder their progress to French territory after that), was only a question of time after the world had seen with what comparative ease the Liége forts had been demolished. See ANTWERP; NAMUR.

But perhaps more than to her army and fortifications, Belgium trusted in the protective influence of international treaties among the Great Powers guaranteeing her independence and neutrality. The Treaties of 1831 and 1839 framed between Great Britain, France, Austria, Prussia and Russia provided that "Belgium shall form an independent and perpetually neutral state;" in 1867 the same powers, with the addition of Italy and Holland, collectively guaranteed the neutrality of Luxemburg. In 1870, on the outbreak of the Franco-Prussian War, Great Britain immediately made separate treaties with both France and Prussia by which the neutrality of Belgium was specially guaranteed during the war. At the same time Great Britain pledged herself to co-operate against either of the two belligerents that might violate that neutrality. In addition, the Treaty of 1839 was positively reaffirmed. When Germany declared war against France in 1914, Great Britain again called upon the two powers to forswear any violation of Belgian territory; France readily gave the desired promise, and Germany refused it.

**Government.**— The Belgian Constitution combines monarchial with a strong infusion of the democratic principle. Contrary to the custom obtaining in constitutional countries, the king of the Belgians has the power to initiate legislation. The executive power is vested in a hereditary king; the legislative in the king and two chambers — the Senate and the Chamber of Representatives — the former elected for eight years, the latter for four, but one-half of the former renewable every four years and one-half of the latter every two years. The senators (of whom there are 120) are elected partly directly, partly indirectly (by the provincial councils), and must be 40 years of age. Their numbers depend on population. The deputies or representatives are elected directly, one for every 40,000 inhabitants at most. All citizens of 25 years of age are electors, and, according to certain qualifications, one elector may have three votes. Abstention from voting is punishable by law. Each deputy is allowed $800 per annum and a free railway pass between his place of residence and the capital. In 1913 the Senate was composed of 70 Catholics, 35 Liberals and 15 Socialists. In the Chamber of Representatives there were 101 Catholics, 44 Liberals, 39 Socialists and two Christian Socialists. On the fall of Brussels, 20 Aug. 1914, the Belgian government was removed to Havre, France. The estimated revenue for 1913, chiefly from railways, customs, excise and direct taxation, was $151,531,000; the estimated expenditure $151,108,000. About one-fourth of the expenditure is in payment of the interest of the national debt, the total of which in 1913 was $747,826,727. The coins, weights and measures are the same, both in name and value, as those of France.

**History.**— The history of Belgium as a separate kingdom, beginning in 1830, when it was constituted an independent European state, would not truly represent the life of the people or account even for the events of the period embraced in it. Situated between the two leading states of Europe, and deeply interested in all the political agitations resulting alike from their rivalries and their alliances, the Belgian people often changed masters. Moreover, the Belgian territory contained within itself one leading element of the dissensions which raged around it. The two great races of different origin and habits, the Celtic and Teutonic, or Latin and German-speaking peoples, whose different policies have divided Europe from the time of the Romans, were combined in its population; the Walloon provinces, Hainaut, Namur, Luxemburg, being nearly allied to the French, while Flanders, Brabant and Limburg approximated more in character and language to the Germans. Thus not only were the great rivalries of Europe represented here in miniature, but their compression within the narrow limits of what is now one of the smallest of European states has resulted in the formation of a distinct national character. While, therefore, the chief events in which Belgium was interested prior to 1830 are matters of European history, a brief outline of them is needed here to give a distinct conception of the character of the people which they contributed to form.

The territory anciently known as Belgian differed considerably from that which has assumed the name in modern times. According to Cæsar, the territory of the Belgæ, who were one of the principal tribes of ancient Gaul, extended from the right bank of the Seine to the left bank of the Rhine and to the ocean. We have it on the authority of Strabo that there were 15 Belgian tribes. This district continued under Roman sway till the decline of the empire and subsequently formed part of the kingdom of Clovis, who subdued nearly the whole of Gaul from the Rhine to the Mediterranean. The Franks at this time did not recognize the law of primogeniture. On the death of a monarch his dominions were divided among his sons, the more ambitious of whom again strove to unite them under their own sway. Thus the Frankish kingdoms under the descendants of Clovis were subject to continual vicissitudes, in which the Belgian territory shared, forming successively a portion of the kingdoms of Metz, Soissons and Austrasia, till the whole was reunited under Charlemagne or Charles the Great. This great conqueror and administrator, the first who strove to unite the

states of Europe in a civilized commonwealth, was of Belgian extraction. It was at Landen and Herstal, on the confines of the forest of Ardennes, that his predecessors, the great mayors of the palace, held sway, while his own capital was established at Aix. Charlemagne in great measure destroyed his own work by adopting the Frankish custom of dividing his kingdom among his sons at his death. This practice, which had proved so disastrous to the dynasty of Clovis, was continued for some time in his family, but was ultimately abolished in France. It long prevailed among the principalities of Germany, hindering their unity and contributing to the ascendancy of France in Europe. Thus Belgium fell to Lothaire, the grandson of Charlemagne, forming part of the kingdom of Lotharingia, which was dependent on the German Empire; but by the Treaty of Verdun (843) Artois and Flanders were united to France.

For more than a century this kingdom was contended for by the kings of France and the emperors of Germany. In 953 it was conferred by the Emperor Otto upon Bruno, archbishop of Cologne, who assumed the title of archduke and divided it into two duchies — Upper Lorraine, containing modern Lorraine, Luxemburg and the dioceses of Metz, Toul, Verdun and the Palatinate; and Lower Lorraine, containing Brabant, Guelders, the bishoprics of Cologne, Liége and Cambray. These duchies were temporarily reunited under Gonthelan I, Duke of Lower Lorraine, who acquired Upper Lorraine in 1033. Among the dukes of Lower Lorraine may also be mentioned Godfrey of Bouillon, the great Crusade leader, who, in 1099, was crowned King of Jerusalem.

The feudal system, which had established itself over the greater part of Europe, likewise prevailed in the Belgian territory, which in the 11th century was divided into duchies, counties and marquisates, under the sway of chiefs owing allegiance to the empire or other of the greater princes, but exercising an almost absolute dominion over their own subjects. Thus were formed the counties of Holland, Brabant, Zealand, Friesland, Namur, Hainaut; the duchies of Limburg, Guelders, Juliers, Luxemburg; the marquisate of Antwerp and others. In the frequent struggles which took place during this period, Luxemburg, Namur, Hainaut and Liége were usually found siding with France, while Brabant, Holland and Flanders commonly took the side of Germany. The princes and the people, however, particularly of Flanders, were not always found on the same side.

The 12th and 13th centuries were distinguished by a general uprising of the industrial communities, which had begun to grow in importance throughout Europe, against the feudal system. This movement was very strongly manifested throughout the Netherlands, less strongly perhaps in Belgium than in Holland. In both countries prosperous municipalities began to arise and assert their freedom; but the spirit of centralization, more strongly developed among the Latin-speaking races, prevailed more in the southern provinces, while the love of individual liberty was more strongly manifested in the north. Many of the towns of Flanders and Brabant, however, became extremely democratic. Ghent in particular distinguished itself by the violence and frequency of its revolts against its rulers.

From this time the popular and civic element began to count for something in political combinations. If one potentate secured the alliance of a count, another might strengthen himself by secretly encouraging insurrection in his towns. The people of Flanders often allied themselves with the English, with whom their commercial intercourse and their love of freedom gave them many common interests and feelings, and both their own counts and the French monarchy often felt the effects of this alliance.

The battle of Courtrai in 1302 greatly weakened the feudal authority, but the ascendancy of the popular element led to various excesses. The organization of popular power was reserved for a later age, and the battle of Rosebeque, 1382, in which the Ghentese under Philip van Artevelde (who had offered the crown of France to Richard II of England as the price of his assistance) were totally defeated, restored the authority of the nobles. In 1384, Flanders and Artois fell to the house of Burgundy by the marriage of the Duke, a scion of the French Crown, with Margaret, daughter of Louis II, Count of Nevers, the last ruler of these provinces. By a succession of happy marriages, by purchase or by force, Holland, Zealand, Hainaut, Brabant, Limburg, Antwerp and Namur had all by 1430 become the inheritance of the same house. In 1442 the duchy of Luxemburg was acquired, and in 1470 Guelders and Friesland. This extraordinary prosperity induced Charles the Bold, who succeeded in 1467, to attempt to unite his territories by the conquest of Alsace, Lorraine and Liége, and raise his duchy to a kingdom. The details of this enterprise, which forms one of the most exciting episodes in European history, belong more immediately to the history of France. It ended in his defeat and death at the battle of Nancy in 1477. His daughter Mary, who succeeded him, carried the fortunes of her house still higher, or rather she carried them into a house still more fortunate than her own, by her union with the Archduke Maximilian, son of the Emperor Frederick. Her splendid possessions had been coveted by many potentates and there were five candidates for her hand, among whom the most important were the Dauphin, son of Louis XI, and the Archduke.

It now became the part of France to excite troubles in Flanders. The policy of Maximilian, conformably to the traditions of the house of Austria, was directed to the aggrandizement of his house. He was frequently at feud with his Netherlandish subjects, whose manners he took little pains to understand, and for whose liberties he had little respect. Wars and leagues succeeded each other, which belong to the history of the great states of Europe. The Netherlands were by this union again brought under the German empire, and especially under the house of Austria, destined soon to become the most powerful in Europe. In 1512 they were formed into a division of the empire under the title of the circle of Burgundy. East Friesland was included in the circle of Westphalia. On being called to the empire, Maximilian conferred the government of the Netherlands on

his son, Philip the Fair, under whom they began to experience the material advantages of an alliance with the house of Austria. The vast European possessions of this house opened up to its subjects the greatest facilities of the age for commercial intercourse, while the discovery of America gave them in addition the commerce of a new world. The industrial skill and enterprise of the Netherlands fitted them much more than the Spaniards, whose haughty disposition made them apt to substitute rapacity for industry, to derive permanent benefit from these opportunities. Margaret, the aunt, and Mary, the sister of Charles V, who succeeded to the government of the Low Countries, exercised it in many respects wisely and well. The former, a patroness of arts and letters, kept her court surrounded with poets, artists and men of learning. A council of state, consisting of the governors or stadtholders of the 17 provinces, assisted them in the administration of affairs, and such was the prosperity of the country that more than one of the cities of the Netherlands rivaled in extent and opulence the capitals of the greatest European kingdoms. This bright day was too soon clouded. The reign of Charles V is less distinguished for the political struggles excited by a too prosperous ambition, which shook nearly every nation of Europe, than for the religious dissensions and the social troubles resulting from them which attended the dawn of the Reformation. The Reformed opinions made great progress in the Netherlands; but here again a remarkable illustration was afforded of the strength of those differences of race, language and sentiment which divided their populations. In Holland, as in Germany, the Reformation triumphed. On the Belgian territory, especially where the Walloon or French element of the population prevailed, although these opinions spread widely, they yielded at length, as in France, to the force of authority or the sentiment of unity. In 1535 Mary published at Brussels an edict condemning all heretics to death. An insurrection excited by persecution was suppressed by Charles V in 1540, and the Netherlands were inseparably united by the law of primogeniture with the crown of Spain. No union could have been more unfortunate. The bigotry of the Spanish branch of the Austrian family has become proverbial, and a country torn with religious dissensions could not have found itself under a worse rule.

Charles V, himself a Netherlander, born in Ghent, and still more his son, Philip II, of Spain, strove to extinguish the Reformed opinions among the Netherland subjects in seas of blood. Philip discarded all respect for the liberties of the Netherlands and subjected them under his governors, particularly the Duke of Alva, to all the horrors of a hostile military rule. Thousands of victims perished by every variety of execution which a barbarous cruelty could devise — hanging, beheading, burning, drowning, interring alive, to which tortures and imprisonments were added in still greater number. During this period of desolation, great numbers of artisans, abandoning their country, carried elsewhere, especially to England and Germany, which sympathized with their opinions, the arts that had enriched their own country and which now acquired through them a wider scope, and contributed to the industrial progress of Europe. William of Orange, the Silent, now made himself the champion of the liberties of his country. Supported chiefly by the northern states, thwarted by the jealousy of the Flemish nobles and opposed by the Walloon provinces, which remained faithful to Spain and even supplied her with troops, he at length succeeded in freeing the seven northern states and forming them into the confederation of the United Provinces, whose independence, declared in 1581, was ultimately acknowledged by Spain. These events belonged chiefly to the history of Holland.

Requesens, the successor of Alva, had tried too late a more humane policy. At Antwerp and Ghent the Spanish soldiers broke out into excesses. The confederates assembled in the latter town signed the pacification of Ghent, proclaiming liberty of conscience and convoking the Estates-General. The Estates called in the aid of France and offered the crown to Henry III, who declined to accept it, dreading the Roman Catholic League in his own country. It is a special feature of the history of those days that while the great rulers, particularly those of France and Germany, persecuted their Reformed subjects, each was ready to protect the Protestant subjects of the others when opposed to their political policy. The success of the revolutionary party, consummated in the north, was at length checked in the southern provinces by the ability of Alexander Farnese, Duke of Parma, the Spanish commander, and by the reactionary spirit evoked in the provinces themselves, strengthened by the emigration of many influential reformers to the northern states, and the Belgian Netherlands remained attached to Spain. From 1596 to 1633 the Spanish Netherlands were transferred to the Austrian branch of the family by the marriage of Isabella, daughter of Philip II, with the Archduke Albert of Austria. On the death of Isabella they reverted to Spain. By the Treaty of Rastadt in 1714 they were again placed under the dominion of Austria. During this period they were the subject of continual intrigues and frequently of open warfare among the European states. Twice conquered by Louis XIV, conquered again by Marlborough, coveted by Holland, Spain, Germany, France and England, they lay continually open to the invasions and struggles of foreign armies, and it was at this period especially that they were, as they have been called, the battlefield of Europe. Some portions of maritime Flanders, Brabant and Limburg which had remained to Spain were during this period conquered and annexed by Holland, while France acquired Artois and Walloon Flanders, the south of Hainaut and part of Namur and Luxemburg, including the important towns of Douai, Lille, Valenciennes, Dunkirk and many others. From 1714 Austria was left in undisturbed possession of the remainder of the northern Netherlands. Joseph II, styled the Philosophical Emperor, excited by his reforms a revolt, headed or stimulated by the monks of Flanders and Brabant, whom he had dispossessed of their convents. The Estates of the two provinces refused to vote the imposts and were dissolved. The populace took to arms. The Virgin was proclaimed generalissimo of the patriot army. The Aus-

trian army concentrated at Turnhout was totally defeated. After applying in vain for assistance to Holland and France, neither of which could be expected to have much sympathy with their movement, the insurgents were at length subdued and the Austrians re-entered Brussels October 1790. Soon after the whole Netherlands were conquered by the revolutionary armies of France and the country was divided into French departments, a change which, as might be expected, provoked as much resistance as the people were able to offer. When Napoleon ruled France, his brother Louis became King of Holland, in 1806. Before long, however, the two brothers quarreled, and when Napoleon sent an army against the Dutch capital in 1810 Louis fled to Bohemia. The latter's son, Charles Louis, afterward became Napoleon III.

Just before the battle of Waterloo, fought on Belgian territory, had once more changed the face of Europe, Belgium was united by the congress of Vienna to Holland, under the title of the kingdom of the Netherlands. The new ruler was Willem I, of the house of Orange, who commanded Dutch and Belgian troops at Waterloo. This fusion had much to recommend it. The ports and colonies of the north formed a suitable complement to the arts and industry of the south. The Flemings and the Dutch spoke the same language and had the same origin; but there remained outside of this harmony the Walloon provinces, French in language and extraction. A most injudicious measure of the Dutch government, an attempt to assimilate the language of the provinces by prohibiting the use of French in the courts of justice, excited an opposition which, encouraged by the success of the French Revolution of 1830, broke out into revolt. The electoral system, moreover, gave the preponderance to the northern provinces, though inferior in population, and the interests of the provinces were diametrically opposed in matters of taxation. Belgium was agricultural and manufacturing, Holland commercial; the one wished to tax imports and exports, the other property and industry. Three different languages were spoken in the Chamber — Dutch, German and French; frequently, indeed, the members did not understand each other. Nothing but the most skilful government could have overcome these fundamental differences, and no statesman appeared fitted to grapple with them. The King, Willem, was far too bigoted and autocratic to reconcile his Flemish subjects to Dutch preponderance. The Belgians, though insisting upon a separate government, offered to accept the King's son as viceroy, but the tactless conduct of that prince snapped the link that might have held the two countries together. The revolutionary movement, which broke out in Brussels on 25 Aug. 1830, became general in the south, and the Dutch troops, at first successful before Brussels, were finally repulsed and compelled by the ever swelling ranks of the insurgents to retire. Austria, England, Prussia and Russia each threatened armed intervention to maintain the union, but France stood behind the Belgian revolutionaries. A seven hours' bombardment of Antwerp by the Dutch so horrified and enraged the Belgians that reconciliation passed beyond the bounds of human possibility. Undeterred by the mutterings of the powers, the provisional government continued to frame a new constitution and to fight the Dutch. They offered the crown to the Duc de Nemours, second son of Louis Philippe; but the father refusing his consent, they next offered it, on the recommendation of England, to Leopold, fourth son of the Duke of Saxe-Coburg-Saalfeld, who accepted it 4 June 1831 under the title of Leopold I (q.v.). In the following year Leopold married, as his second wife, the daughter of Louis Philippe, a circumstance that no doubt contributed toward curbing the French King's designs on the annexation of Belgium to his own dominions. A convention of the powers was held in London to determine on the affairs of the Netherlands and stop the effusion of blood. It favored the separation of the provinces and drew up a treaty to regulate the change. The powers divided Luxemburg, Limburg and the national debt between Holland and Belgium, awarded Antwerp to the latter, declared the Scheldt open to both countries and recognized Belgium as a neutral, independent state. But the Dutch king refused to accept these terms and insisted on holding Antwerp. A combined French and British fleet sailed for Holland and a French army was sent to besiege Antwerp. These manœuvres had the desired effect; the Dutch evacuated Antwerp but retained two forts commanding the Scheldt. In retaliation, the Belgians held on to Limburg and Luxemburg. Not until 1838 did King Willem signify his acquiescence to the terms laid down by the powers, and in 1839 the Belgians yielded, most reluctantly and under pressure, the portions of Limburg and Luxemburg — which they had retained since 1832 — back to Holland.

Under the wise and enlightened reign of Leopold I, a prosperous period of 34 years, Belgium became a united and patriotic community. Arts and commerce flourished, and a place was taken in the family of nations upon which the Belgian people could look with unalloyed satisfaction. During the French Revolution of 1848 Leopold was supposed to have declared his willingness to resign the crown if his subjects wished it, but there is no historical foundation for that statement although many Belgians believed it. Yet the fact that the crisis which shook most of the thrones of Europe passed harmlessly over Belgium confirmed the stability of the monarchy at a critical moment. The explanation may perhaps be found in the intensely democratic character of the Constitution framed in 1830–31. By its provisions the King, while nominally endowed with all the prerogatives of executive power and even the rights of initiative, is nevertheless so strictly hand-tied by ministerial control that his power is practically non-existent. "Our Constitution . . . breathed hatred of the past King and fear of the future King. It snatched from the Crown the faculty of doing good or evil." Leopold I died in 1865, regretted and respected. He began the task of molding the Belgian people; it was continued with equal prudence by his eldest son and successor, Leopold II.

Leopold I had ruled for 34 years; notwithstanding all constitutional limitations, it was

his will, and not that of his ministers, which prevailed on important occasions. Leopold II (q.v.) was destined to reign 10 years longer than his father, and to illustrate the political theory of a "benevolent despotism." A man of iron resolution, shrewd business sense and not overburdened with ethical ballast, he widened the narrow vision of his people, built up an amazing degree of prosperity, carried the Belgian flag far beyond the narrow confines of his kingdom by commerce and colonization, and literally fulfilled the grandiose promises he made on taking the accession oath. The outstanding feature of his reign is the acquisition and development of that rich territory now known as the Belgian Kongo (q.v.). Between 1886 and 1894 Belgium was convulsed with labor strikes, socialist risings and universal clamor for electoral reforms. The working men's party threatened to organize a general strike if their grievances were not speedily recognized. At the end of 1889 the 28,000 workmen in the coaling district of Charleroi joined the movement without abandoning for a moment a perfectly calm and legal attitude, and gained a complete victory on economic points in dispute. From this developed a political strike, and a few weeks later an assembly in Brussels of 50,000 workmen from every part of the country demanded, with all the calm that the knowledge of their power gave them, an extension of electoral rights. For nearly five years the struggle raged in the country and in the Parliament before a modified system of universal suffrage was adopted. Leopold II died in 1909. His only son had died in childhood, since when the succession devolved upon Leopold's brother, Philippe Eugène, Count of Flanders, who immediately renounced his right of succession when his first son, Prince Baldwin (Baudoin), was born. To prepare him for his eventual inheritance the young prince was carefully educated, but he died suddenly of pneumonia in 1891, at the age of 21. The second son of the Count of Flanders, Prince Albert, then 16 years of age, became heir-presumptive to the throne, and succeeded his uncle, Leopold II, on 17 Dec. 1909. See ALBERT I, KING OF THE BELGIANS.

The new King proved himself a monarch of a different type from his predecessors. Of great stature and masterful will like his uncle, his character and demeanor run in entirely different channels. Before he had been five years on the throne he became a king without a country, an exile with his family and government. The main events of his short reign before the war were inherited troubles — the religious strife and the question of military reforms.

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**BELGIUM AND THE WAR.** Whereas the variously-described "causes" of which the war was the effect may long remain the subject of controversy among historians — according to the national viewpoint of each, the manner in which Belgium was swept into the conflict is comparatively clear and simple of explanation. The political status of Belgium was one of "perpetual neutrality," imposed upon her without consultation or consent by powerful neighbors. The historic instrument which guaranteed the independence, integrity and perpetual neutrality of the kingdom, dated London, 19 April 1839, bears the seals and signatures of the plenipotentiaries of Austria, Belgium, France, Great Britain, Prussia and Russia. "In the name of the Most Holy and Indivisible Trinity" the sovereignty of Belgium was strictly circumscribed at her birth; being "held to observe the same neutrality toward all the other states," she was not permitted to enter into political agreements with any other state, and was only entitled to call for help if one of the guarantors broke faith and invaded her territory. Of this solitary privilege Belgium duly availed herself on 4 Aug. 1914. On 1 Aug. 1914 Germany declared war on Russia and invaded Luxemburg, a little state adjoining Belgium, and similarly a neutral territory with guaranteed independence and integrity (11 May 1867). On 2 August (7 P.M.) the German government issued an ultimatum to Belgium asserting "the intention of France to march through Belgian territory against Germany," and expressing a "fear that Belgium, in spite of the utmost goodwill, will be unable, without assistance, to repel so considerable a French invasion with sufficient prospect of success to afford an adequate guarantee against danger to Germany. It is essential for the self-defense of Germany that she should anticipate any such hostile attack." On the other hand, "the German government would, however, feel the deepest regret if Belgium regarded as an act of hostility against herself the fact that the measures of Germany's opponents force Germany, for her own protection, to enter Belgian territory." The note, which was written in German and marked "Very Confidential," proceeded with the following declaration, "in order to preclude any possibility of misunderstanding," that:

*1. Germany has in view no act of hostility against Belgium. In the event of Belgium being prepared in the coming war to maintain an attitude of friendly neutrality toward Germany, the German government bind themselves, at the conclusion of peace, to guarantee the possessions and independence of the Belgian kingdom in full.*

*2. Germany undertakes, under the above-mentioned condition, to evacuate Belgium territory on the conclusion of peace.*

*3. If Belgium adopts a friendly attitude, Germany is prepared, in co-operation with the Belgian authorities, to purchase all necessaries for her troops against a cash payment, and to pay an indemnity for any damage that may have been caused by German troops.*

*4. Should Belgium oppose the German troops, and in particular should she throw difficulties in the way of their march by a resistance of the fortresses on the Meuse, or by destroying railways, roads, tunnels or other similar works, Germany will, to her regret, be compelled to consider Belgium as an enemy.*

*In this event, Germany can undertake no obligations toward Belgium, but the eventual adjustment of the relations between the two States must be left to the decision of arms.*

*The German government, however, entertain the distinct hope that this eventuality will not occur, and that the Belgian government will know how to take the necessary measures to prevent the occurrence of incidents such as those mentioned. In this case the friendly ties which bind the two neighboring states will grow stronger and more enduring.*

The Belgian government were given a time limit of 12 hours within which to reply. At 1:30 A.M. on 3 August the German Minister in Brussels called on Baron van der Elst, the Belgian Foreign Secretary, and informed him that French dirigibles had dropped bombs and a French cavalry patrol had crossed the frontier in violation of international law, as war had not been declared. The Belgian official asked where these incidents had happened, and was told that it was in Germany. Baron van der Elst then observed that in that case he could not understand the object of this communication, to which the German Minister replied that these acts were contrary to international law and "were calculated to lead to the supposition that other acts, contrary to international law, would be committed by France." During the same day the Belgian representatives at Paris, London, St. Petersburg, Vienna, Berlin and The Hague were instructed to announce the terms of the German demands and the Belgian reply thereto: "Our answer has been that this infringement of our neutrality would be a flagrant violation of international law. To accept the German proposal would be to sacrifice the honor of the nation. Conscious of her duty, Belgium is firmly resolved to repel any attack by all means in her power." At the same time the King of the Belgians telegraphed to King George making a "supreme appeal" to the British government "to safeguard the neutrality of Belgium." The British government had (31 July) requested the French and German governments to state whether, in the event of war, both countries would be "prepared to engage to respect the neutrality of Belgium so long as no other power violates it." France gave a ready guarantee; Germany did not reply. On receipt of the Belgian King's appeal the British government again requested from Germany an assurance that Belgian neutrality would be respected. Later in the day news came that German troops were at Gemmenich inside the Belgian frontier opposite Aix-la-Chapelle. The British Ambassador was instructed to demand a reply before midnight. The telegram reached Berlin at 7 P.M., and the German government, without waiting for the full time to expire, handed the Ambassador his passports. The invasion of Belgium had begun. In a speech to the Belgian Chambers (4 August) King Albert said: "if we are called upon to resist the invasion of our soil and to defend our threatened hearths, this duty, however hard it may be, will find us armed and ready for the greatest sacrifices . . . one vision alone fills our thoughts — our menaced independence; one

duty alone presents itself to our wills — stubborn resistance. In these grave circumstances two virtues are requisite, a courage that is calm and stedfast, and complete unity among all Belgians. If the foreigner violates our territory, in contempt of the neutrality whose claims we have always scrupulously observed, he will find all Belgians grouped around their Sovereign, who will never betray his constitutional oath, and around the government which enjoys the full confidence of the entire nation. . . . A country which defends itself wins the respect of all. . . . That country does not perish.» See ALBERT, KING OF THE BELGIANS; BETHMANN-HOLLWEG, VON THEOBALD; WAR, EUROPEAN — DIPLOMATIC HISTORY.

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**BELGIUM, Princess Dowager Marie of,** Countess of Flanders and mother of the reigning King Albert: b. 1845; d. 26 Nov. 1912; daughter of Prince Charles Anton of Hohenzollern-Sigmaringen. She married, 1867, Philip, Count of Flanders and third son of Leopold I. Her husband, who became very deaf, died in 1905, having renounced his right of succession, and her eldest son, Prince Baldwin, died unmarried in 1891. She was known as "La Princesse artiste," and was an accomplished painter, etcher and musician.

**BELGOROD,** byĕl'gō-rōt, or **BIELGOROD,** Russia, town in the government of, and 87 miles south from the town of, Kursk, on the Donetz. It is the seat of an archbishop's see and has important fairs. Belgorod, which derives its name from a neighboring chalk hill, is divided into two — the old and new — towns. It has manufactures of leather and soap, and agriculture is fairly well developed. There is a considerable trade in wax, apples, tallow candles and especially of chalk, of which about 1,300 tons are produced annually within the city limits. Pop. about 22,000.

**BELGRADE,** Serbia, the capital of the kingdom, situated in the angle formed by the junction of the Save with the Danube, overlooked by a citadel on a rocky eminence about 160 feet high. The town has been almost entirely transformed in recent times and now contains a number of fine buildings and wide streets, being provided with the electric light, tramways, telephones, waterworks, etc., and having generally the aspect of any modern European town. It contains the royal palace, residences of various ambassadors or ministers, the chief courts and government departments, archiepiscopal cathedral, Protestant church and school, high school or college, gymnasia, military school, national library of 80,000 volumes, national museum, etc.; also very fine parks and an old Turkish kiosk. At the head of the educational institutions is a university with faculties of philosophy, jurisprudence and engineering. It is the seat of the Royal Serbian Academy of Sciences. The most numerous places of worship are the Greek Catholic. There are no industries of any importance, but trade, however, is active, Belgrade being the chief emporium of the kingdom, the place to which most of the imports and exports of Serbia are brought, and through which a large transit trade passes between Austria and Turkey. It is now connected by railway with Budapest and with Constantinople and Salonica, and carries on a large shipping trade by the Danube and also the Save. Under the name of Singidunum, Belgrade was the station of a Roman legion, and in later years was several times destroyed in the contests of the Byzantines, Bulgarians and Hungarians. Being the key of Hungary, it was long an object of fierce contention between the Austrians and the Turks. It was taken by the latter in 1521 and held by them till 1688, when it was retaken by the imperial army. Two years afterward it was again captured by the Turks, who perpetrated every sort of atrocity in the conquered city, besides killing 1,200 of the garrison. From this period it remained in possession of the Turks till 1717, when it was besieged by Prince Eugene. After a desperate conflict between the contending armies the Turks were defeated. In 1739 the Turks came into possession of it by treaty, retaining it till 1789, when it was taken by the Austrians. It was restored by treaty to the Turks in 1791; since which time it has shared the varying fortunes of Serbia. Though Serbia became practically independent in the early part of the 19th century, the Turkish garrison was not withdrawn till 1867. In consequence of a quarrel with the Serbians it was bombarded by the Turkish garrison in 1862. In 1867 it was evacuated by the Turks altogether and from the Treaty of Berlin (July 1878) until 1914, the capital of an independent state. On 9 Oct. 1915, it was occupied by Austro-

German troops, and after the Austro-Bulgarian occupation of the country, completed 2 Dec. 1915, the Serbian government was established at Corfu. An American consul resides here. See SERBIA; WAR, EUROPEAN. Pop. 90,890.

**BELGRADE, Forest of,** is the only forest on the European shore of the Bosporus. It has an area of about 20 square miles and is preserved untouched by the axe to attract rain.

**BELGRAND,** bĕl-grän, **Marie François Eugène,** French civil engineer: b. Ervy, 23 April 1810; d. 8 April 1878. He designed the gigantic sewerage system and water supply system of Paris, and published 'La Seine'; 'Les travaux souterrains de Paris'; 'Les eaux anciennes de Paris'; 'Les eaux nouvelles,' etc.

**BELGRAVIA,** the name given to the fashionable quarter of London south and west of Belgrave Square. Till the early part of the 19th century the district was a marshy farm. The district was drained and filled in about 1825.

**BELHAVEN,** N. C., town in Beaufort County, 120 miles east of Raleigh, located at the mouth of the Pungo River on Pamlico Sound and on the Norfolk Southern Railroad. It is in the centre of an agricultural region whose products are chiefly cotton, corn and potatoes. Another industry of some importance having its centre here is fishing and dredging for oysters in the Sound. In the town are a number of large saw mills and cooperage shops. Pop. 3,200.

**BELIAL,** bē'lī-ăl or bēl'yăl. By the translators of the English Bible, this word which occurs 27 times in the Old Testament is often treated as a proper noun, as in the expression "daughter of Belial," which the translators of the Revised version translate as "wicked woman." Cheyne in the *Expositor* for 1895, pp. 435–39, gives as its equivalent (1) subterranean waters (and so connected with Belite, a goddess of the underworld in Babylonian mythology); (2) a hopeless ruin; and (3) a worthless scoundrel. To the later Jews Belial seems to have become what Pluto was to the Greeks, the name of the ruler of the infernal regions; and in 2 Cor. vi, 15 it seems to be used as a name of Satan, as the personification of all that is bad.

**BELIEF.** In a general sense belief is the assent of the understanding to the truth of a proposition, but in a technical and theological sense has come to be used as a mental exercise somewhat depending upon the volition of the individual. The word is used to mean the acceptance of a proposition, statement or fact as true on the ground of evidence, authority or irresistible mental predisposition; the state of trust in and reliance on a person, thing or principle; as also for the fact believed, and sometimes specifically for the Apostles' Creed. Belief is by some distinguished from knowledge, inasmuch as the latter rests on evidence, while belief rests on authority. Belief should, some say, not be used of facts occurring in one's own experience, or principles of which the opposite implies absurdity, such as the law of contradiction in deductive logic. These we know, and, according to this view, the term should be limited to cases where a proposition is accepted without evidence, or where such evidence as is available implies only probability. On the other hand, certain psychologists are accustomed to regard as beliefs the fundamental data on which reasoning rests; and to say that all knowledge rests ultimately on belief. Belief, they say, may admit of all degrees of confidence, from a slight suspicion to full assurance. There are many operations of mind in which it is an ingredient — consciousness, remembrance, perception. Kant defined opinion as a judgment which is insufficiently based, subjectively as well as objectively; belief, as subjectively sufficient but objectively inadequate; knowledge, as both subjectively and objectively sufficient. The strongest beliefs may, of course, be false; beliefs in ghosts, astrological prognostications, etc., are usually treated as superstitions. Beliefs as such rest on grounds regarded as sufficient by the person believing, who is prepared to act on his belief; but their grounds may have absolutely no validity for any other person. Such beliefs are nevertheless very real. On the other hand there are many propositions accepted traditionally, and spoken of as beliefs, which are not real, vital abiding truths for those who nominally accept them; which have no influence on character or mental tone, and on which those who hold them would not be prepared to act. Faith is a word used in very much the same sense as belief, but especially signifies the acceptance of and reliance on the truths of religion.

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**BELINDA,** a novel by Maria Edgeworth. Belinda Portman goes to spend the winter in London with Lady Delacour, a brilliant and fashionable woman; at her house she meets Clarence Hervey for the first time. Various obstacles keep the lovers apart, but the story ends happily with the marriage of Hervey and Belinda. Despite a didactic vein, apparent here as in others of her novels, Belinda is an interesting work and secures for its author her prominent place in English fiction.

**BELINSKY, Vissarion Grigorevitch,** Russian writer and critic: b. Tchembar, government of Penza, 1810; d. Saint Petersburg, 28 May 1848. Entered the University of Moscow 1829, but was expelled before graduation on account of a drama he had written which fiercely attacked the institution of serfdom. His first important work, however, was his 'Literary Reveries' (1834), a critical review of the development of Russian literature. In 1839 he removed to Saint Petersburg, where he became prominent as a critic, especially after the appearance of his essays on the Russian writers of his time,

the last of these, on Pushkin, constituting a volume of over 500 pages (1848). His last important work was his 'Literary Review for 1847,' in which he strongly expressed the radical views that tinged all his works. His collected works were published in 12 volumes in 1862. Belinsky is now considered to have been the foremost critic of Russian literature, his fame having augmented considerably since his death. Consult Pypin, 'Belinsky: His Life and Correspondence' (Saint Petersburg 1876).

**BELISARIUS,** Byzantine general: b. about 505; d. 565. To him the Emperor Justinian chiefly owed the splendor of his reign. Belisarius first served in the bodyguard of the Emperor, soon after obtained the chief command of an army of 25,000 men stationed on the Persian frontiers, and in the year 530 gained a complete victory over a Persian army of not less than 40,000 soldiers. The historian Procopius was at this time secretary of Belisarius. In 531, however, he lost the battle of Callinicum against the same enemy, who had forced his way into Syria — the only battle which he lost during his whole career. He was recalled from the army and soon became at home the support of his master, the Emperor. In the year 532 civil commotions, proceeding from two rival parties, who called themselves the green and the blue and who caused great disorders in Constantinople, brought the life and reign of Justinian into the utmost peril, and Hypatius was already chosen emperor, when Belisarius with a small body of faithful adherents restored order. Justinian, with a view of conquering the dominions of Gelimer, king of the Vandals, sent Belisarius with an army of 15,000 men to Africa. After two victories he secured the person and treasures of the Vandal King. Gelimer was led in triumph through the streets of Constantinople, and Justinian ordered a medal to be struck with the inscription 'Belisarius gloria Romanorum,' which has descended to our times. By reason of the dissensions existing in the royal family of the Ostrogoths in Italy, Justinian was induced to attempt to bring Italy and Rome under his sceptre. Belisarius reduced Sicily in 535 and in the following year received the submission of the cities of lower Italy, with the exception of Naples, which he carried by storm. In December of the same year he entered Rome, where he was besieged by the Goths for an entire year. The latter were finally compelled to raise the siege. In 538 Belisarius was reinforced by Narses, but the latter failed to co-operate with him and Milan was sacked by the Goths under Braias. Narses was recalled and both armies were placed under the command of Belisarius. In 540 Belisarius pushed the Goths back to Ravenna, and here vanquished their army and captured their king, Vitiges, whom, together with many other Goths, he conducted to Constantinople. The war in Italy against the Goths continued, but Belisarius, not being sufficiently supplied with money and troops by the Emperor, demanded his recall in 548. Narses, his rival, was appointed to the command. He afterward commanded in the war against the Bulgarians, whom he conquered in the year 559. Upon his return to Constantinople he was accused of having taken part in a conspiracy. But Justinian was convinced of his innocence, and is said to have restored to him his property and dignities, of which he had been deprived. His history has been much colored by the poets, and particularly by Marmontel, in his otherwise admirable politico-philosophical romance. According to his narrative, the Emperor caused the eyes of the hero to be struck out, and Belisarius was compelled to beg his bread in the streets of Constantinople. Other writers say that Justinian had him thrown into a prison, which is still shown under the appellation of the Tower of Belisarius. From this tower he is reported to have let down a bag fastened to a rope and to have addressed the passers-by in these words: "Give an obolus to Belisarius, whom virtue exalted, and envy has oppressed." Of this, however, no contemporary writer makes any mention. The blind Belisarius forms the subject of a noted painting by Gérard. Tzetzes, a slightly esteemed writer of the 12th century, was the first who related this fable. Certain it is that, through too great indulgence toward his wife, Antonina, Belisarius was impelled to many acts of injustice, and that he evinced a servile submissiveness to the detestable Theodora, the wife of Justinian. Consult Gibbon, E., 'Decline and Fall of the Roman Empire' (edited by Bury, Vol. IV, London 1898); 'The Cambridge Mediæval History' (Vol. I, New York 1911); Hodgkin, 'Italy and Her Invaders' (Oxford 1880-85); Bury, 'Later Roman Empire' (London 1893).

**BELIZE,** bĕ-lēz' (sometimes written BELICE or BALIZE), British Honduras, the capital of the colony. Lat. 17° 29' N.; long. 88° 8' W. It has been suggested that the name is derived from the French *balise,* a beacon, but more probably it is a corruption of Wallace, a Scotch buccaneer named Peter Wallace, with 80 companions, having erected houses enclosed with a rude palisade at this point after the Spaniards abandoned Bacala, leaving a large part of the rugged, uninviting north coast of the Gulf of Honduras unoccupied, save by freebooters, during the latter half of the 17th century. Accordingly the name Walis, Balis or Belize was applied by the natives and Spaniards to the settlement, the river on which it was situated and subsequently to the whole region occupied by the English. (Consult Bancroft's 'History of Central America,' Vol. II, p. 624). Wood-cutting was the chief occupation of the establishment. The value of the forests attracting other settlers, Belize was attacked by the authorities of Yucatan, who sought to expel them as trespassers in 1733. Various unsuccessful attempts with the same object were made in subsequent years, the most formidable in 1754. Again in 1779, war existing between England and Spain, the governor of Yucatan organized an expedition against Belize; and Spain's last effort to regain possession by force was made in 1798. Before that time the settlers had organized a government. It is an interesting fact that, originating as it did, the town has become, with its population of more than 5,000, its church, schools and hospital, a centre for the maintenance of good order. It has the characteristic features of a small English colonial capital — the governor's house, etc. Coral reefs form a natural breakwater for the harbor. Large vessels are loaded and unloaded by means of tenders. Logwood and mahogany are the chief

items of trade. Other staple products are bananas, coffee, cacao, plantains, etc. See HONDURAS, BRITISH, and consult works there referred to. Pop. 10,478.

**BELKNAP, George Eugene,** American naval officer: b. Newport, N. H., 22 Jan. 1832; d. Key West, Fla., 7 April 1903. He was appointed midshipman in the navy in 1847; became lieutenant-commander in 1862; commander in 1866; captain in 1872; commodore in 1885, and rear-admiral in 1889, and was retired in 1894. He took part in the capture of the Barrier Forts on the Canton River, China, in 1856; and in the Civil War commanded the *New Ironsides* at the bombardment of the forts and batteries in Charleston Harbor, and in both of the attacks on Fort Fisher. In 1873, as commander of the *Tuscarora,* while engaged in deep-sea sounding in the north Pacific Ocean, he made discoveries concerning the topography of the bed of the ocean that found high favor among scientists. He was appointed superintendent of the United States Naval Observatory in 1885 and, among other works, published 'Deep Sea Soundings.'

**BELKNAP, Jeremy,** American Congregational clergyman: b. Boston, Mass., 4 June 1744; d. there, 20 June 1798. He was graduated at Harvard in 1762; was pastor of the Congregational Church in Dover, N. H., 1767–86, and of the Federal Street Church in Boston, 1787–98; and was active for the American cause during the Revolution. The Massachusetts Historical Society, organized in 1790, recognizes him as its founder. In 1792 he became an overseer of Harvard College. A very great part of his time was spent in biographical and historical research. He was the author of a 'History of New Hampshire' (3 vols., 1784–92); 'A Discourse Intended to Commemorate the Discovery of America by Columbus, with Four Dissertations' (1792); 'An Historical Account of Those Persons Who Have Been Distinguished in America,' generally known as the 'American Biography' (2 vols., 1792–98); 'The Foresters: An American Tale' (1796); 'Collection of Psalms and Hymns' (1795). Consult his 'Life,' (New York 1847).

**BELKNAP, William Worth,** American military officer, son of Gen. W. G. Belknap: b. Newburg, N. Y., 22 Sept. 1829; d. Washington, D. C., 13 Oct. 1890. In 1861 he entered the Union army as major of the 15th Iowa Volunteers and was engaged at Shiloh, Corinth and Vicksburg; but became most prominent in Sherman's Atlanta campaign He was promoted to brigadier-general, 30 July 1864, and major-general, 13 March 1865. He was collector of internal revenue in Iowa from 1865 to 13 Oct. 1869, when he was appointed Secretary of War, which office he occupied till 7 March 1876. He resigned in consequence of accusations of official corruption. Subsequently he was tried and acquitted.

**BELL, Acton.** See BRONTE, ANNE.

**BELL, Alexander Graham,** American scientist, inventor of the telephone: b. Edinburgh, Scotland, 3 March 1847. He was a son of Alexander M. Bell (q.v.), and was taught at home by his parents, more especially by his mother, whose musical talent he inherited, and by August Benoit Bertini, a musical authority and composer. He entered McLauren's Academy in Edinburgh and, a year later, the Royal High School, graduating shortly after his 13th birthday. Then he went to London and received instruction in elocution and the mechanism of speech from his grandfather, Alexander Bell (b. 1790; d. 1865), a recognized authority on these subjects. Returning home, he was further trained along the same lines by his father, with a view to following the family profession. Was then employed during a year as pupil-teacher at Weston-House Academy, Elgin, Scotland, after which he entered the University of Edinburgh and attended lectures upon Latin under Doctor Sellers and upon Greek under Professor Blakie. Then he returned to Elgin as resident master and teacher of elocution and music, and remained two years. Was instructor in Somersetshire College, Bath, England, during a year, then became assistant to his father in London (the latter having removed there and received the appointment of lecturer on elocution in University College). In 1868 he taught several deaf-born children to speak, and from July to December had entire charge of his father's professional affairs, including the giving of lessons and lectures at the different schools and the correcting of defects in speech, while the father was delivering lectures in America. Early the next year he was taken into partnership with his father. During 1868–70 he attended courses on anatomy and physiology at University College, London, joined the college medical society and matriculated as an undergraduate at the London University. Owing to the death of two of his sons by tuberculosis and the fear that his only remaining son might fall a victim, Graham's father resigned his lectureships, disposed of his practice in London and, with his family, moved to Canada and secured a country place at Tutelo Heights, near Brantford, Ontario. Through living out-of-doors as much as possible, Graham Bell regained his health.

Beginning 1 April 1871, Alexander Graham Bell gave special instruction to teachers of deaf children in the use of his father's physiological symbols of visible speech in Boston and Northampton, Mass., Hartford, Conn., and other cities. In 1872 he opened in Boston a normal training school, known as the School of Vocal Physiology, for teachers of the deaf and for instruction in the mechanism of speech, faults of speech, etc. In 1873 he was appointed professor of vocal physiology in the school of oratory of the Boston University. Here he remained until 1877, when he went abroad to lecture on the telephone. Before he was 17 years of age he devised a method for removing the husks from wheat, and he and his brother made a speaking automaton. Among the more important inventions are the harmonic multiple telegraph (1874); the fundamental method that underlies the electric transmission of speech in any form in any part of the world (1875); the magneto-electric speaking-telephone (1875); the photophone for transmitting speech and other sounds to a distance by means of a beam of light (1880); an induction-balance with magneto-electric telephone for painlessly locating bullets or other metallic masses lodged in the human body (1881); the telephone probe

to determine the position and depth of metallic masses in the human body (1881); the spectrophone for determining the range of audibility of different substances in the spectrum 1881); joint inventor of the graphophone and flat disc records for recording and reproducing speech, music and other sounds, "the commercial origin of the sound-reproducing art" (1884–86); tetrahedral kites and kite structures (1903); joint inventor in a number of improvements designed to promote aerial locomotion in connection with the Aerial Experiment Association (1903–08).

Among the medals awarded to Alexander Graham Bell are the following: Centennial Exposition, Philadelphia, gold medal for speaking-telephone, gold medal for visible speech (1876); Royal Cornwall Polytechnic Society, the James Watt silver medal for the telephone (1877); Massachusetts Charitable Mechanics Association, gold medal for the telephone, gold medal for visible speech (1878); Society of Arts, London, Royal Albert silver medal for his paper on the telephone (1878); République Française Exposition Universelle Internationale, Paris, gold medal for the telephone and a silver medal (1878); Society of Arts, London, Royal Albert silver medal for his paper on the photophone (1881); the Karl Koenig von Wuertemberg gold medal; Society of Arts, London, Royal Albert gold medal for his invention of the telephone (1902); John Fritz gold medal (1907); Franklin Institute of Philadelphia, Elliott Cresson gold medal for the electrical transmission of speech (1912); David Edward Hughes gold medal and a silver medal (1913); American Institute of Electrical Engineers, Thomas Alva Edison gold medal (1914). Among the honorary degrees conferred upon Alexander Graham Bell are the following: Doctor of Laws, Illinois College (1881), Harvard College (1896), Amherst College (1901), Saint Andrew's University (1902), Edinburgh University (1906), Queen's University, Canada (1908), George Washington University (1913), Dartmouth College (1914); Doctor of Philosophy, National Deaf-Mute College (now Gallaudet College) (1880), Würzburg University (1882); Doctor of Science, Oxford University (1906); Doctor of Medicine, Heidelberg, Germany (1886). To him was awarded by the government of France the Volta prize of 50,000 francs for the electrical transmission of speech (1880); he was also decorated and created an officer of the Legion of Honor of France (1881).

Among the societies of which Alexander Graham Bell is a member are the following: Boston Society of Natural History; American Academy of Arts and Sciences, Boston; Royal Society of Arts, London (honorary); Society of Telegraph Engineers and Electricians, London; Institute of Electrical Engineers, London; American Association for the Advancement of Science (life); Philosophical Society of Washington; American Philosophical Society, Philadelphia; National Academy of Sciences; National Educational Association (life); Société de Physique (corresponding), Paris; American Otological Society (honorary); American Institute of Electrical Engineers (ex-president); American Association to Promote the Teaching of Speech to the Deaf (founder, endower and ex-president); Antiquarian Society of Massachusetts; Anthropological Society of Washington; Washington Academy of Sciences; National Geographic Society (ex-president); Association for the Improved Instruction of Deaf-Mutes (honorary); Telephone Pioneers of America; American Anthropological Society; American Senetic Association; American Laryngological, Rhinological and Otological Society (honorary). In 1887 he founded and endowed the "Volta Bureau for the Increase and Diffusion of Knowledge Relating to the Deaf," Washington, D. C. In 1900 he assisted in the formation of the American Association to Promote the Teaching of Speech to the Deaf and endowed the association. As special agent of the Bureau of the Census he determined the scope of that part of the 12th census relating to the deaf of the United States living on 1 June 1900, initiated the inquiry, specified the tabulations to be made from the data secured, conducted the correspondence and prepared the text of the special report of 200 pages that is valued highly by all who are investigating any phase of deafness. He was appointed by Congress a regent of the Smithsonian Institution in 1898 and has been regularly reappointed since. In January 1904 he brought the remains of James Smithson, founder of the Smithsonian Institution, from Genoa, Italy, to New York, where they were received with national honors and conveyed to Washington.

**BELL, Alexander Melville,** Scottish-American educator: b. Edinburgh, 1 March 1819; d. Washington, D. C., 7 Aug. 1905. He was a distinguished teacher of elocution at the university of his native city; in 1865 removed to London to act as a lecturer in University College, and in 1870 went to Canada and became connected with Queen's College, Kingston. He invented the system of "visible speech," in which all the possible articulations of the human voice have corresponding characters designed to represent the respective positions of the vocal organs. This system has been successfully employed in teaching the deaf and dumb to speak. Besides writing on this subject he wrote on elocution, stenography, etc. He was the father of Alexander Graham Bell, the inventor of the telephone.

**BELL, Andrew,** Scottish educator, author of the mutual instruction or "Madras" system of education: b. Saint Andrews, 27 March 1753; d. Cheltenham, England, 27 Jan. 1832. He was educated at the university of his native town, resided for seven years in Virginia as tutor to a plasterer's family, and on returning took orders in the Church of England. In 1787 he went to India, where he held eight army chaplainships simultaneously and became manager of the institution for the education of the orphan children of European soldiers at Madras established by the East India Company. The superintendence of this asylum was undertaken by Dr. Bell, who, though the love of money was his besetting weakness, refused the salary of 1,200 pagoda (£480) which was attached to it. Failing to retain the services of properly qualified ushers he resorted to the expedient of conducting his school through the medium of the scholars themselves. It was in the mode of conducting a school by means of mutual in-

struction that the new method of Dr. Bell consisted; and its value as an abbreviation of the mechanical part of teaching, and where large numbers were to be taught economically, could not be easily overestimated at the time. His system, however, is now abandoned. From the commencement of his experiment he made the scholars, as far as possible, do everything for themselves; they ruled their own paper, made their own pens, etc., while the teacher only directed them. The maxim of the school was that no boy could do anything right the first time, but he must learn when he first set about it, by means of his teacher, so as to be able to do it himself ever afterward. After superintending the school for seven years he found it necessary for his health to return to Europe. On his arrival he published in 1797 a pamphlet entitled 'An Experiment in Education made at the Male Asylum of Madras,' in which he gave an account of his system. He founded a national society for the education of poor children by means of his system, to be operated in accordance with Anglican teaching. The first place in England where the system was adopted was the charity school of Saint Bodolph's, Aldgate, and gradually, especially through the influence of Joseph Lancaster, who founded a rival society on nonsectarian lines, it was widely carried out in England, and indeed in almost every other civilized country. Dr. Bell became in 1801 rector of Swanage, Dorset, and in 1819 acquired the dignity of a prebendary of Westminster and was master of Sherburn Hospital, Durham. He employed himself during his later years in writing several works on education, among which the most valuable were 'The Elements of Tuition,' 'The English School' and 'Brief Manual of Mutual Instruction and Discipline.' Before his death he gave over to trustees £120,000 3 per cent stock for education, half of it for the purpose of founding an academy in his native city. His method was the forerunner of the pupil-teacher system. Consult 'Life by Southey' (1844); Meiklejohn, 'An Old Educational Reformer' (1881).

**BELL,** Sir **Charles,** Scottish anatomist: b. Edinburgh November 1774; d. near Worcester, England, 28 April 1842. He studied anatomy under his brother, John Bell (q.v.), and had scarcely reached manhood before he had proved himself to be a first-rate anatomist as well as an excellent lecturer. In 1804, being already known by his published works, he went to London, and in 1811 published an essay entitled 'A New Idea of the Anatomy of the Brain,' containing the important discovery of the distinction between sensory and motor nerves, on which his fame chiefly rests. In 1812 he was appointed surgeon to the Middlesex Hospital, to whose prosperity he afterward greatly contributed. In 1824 he accepted the chair of anatomy and surgery to the London College of Surgeons, and in 1836 that of surgery in the University of Edinburgh. His principal works are 'Anatomy of Expression' (1806); 'System of Operative Surgery'; 'Anatomy and Physiology,' with his brother John; 'Animal Mechanics' (1828); 'Nervous System' (1830); and the 'Bridgewater Treatise on the Hand' (1833); 'The Institutes of Surgery' (1838), and 'Practical Essays' (1841). He was knighted in 1831. There is a life in French by Pichot (1859), and in 1870 a selection from Sir Charles Bell's correspondence was published.

**BELL, Charles Frederick Moberly,** English journalist, managing director of the London *Times:* b. Alexandria, Egypt, 2 April 1847; d. London, 5 April 1911. Started as a young man on a commercial career in Egypt, in 1865, aged 18, he took a vacation in walking along the entire length of the Suez Canal (103 miles) then in course of construction, and sent a glowing account of his trip to the London *Times,* pointing out the enormous advantage and brilliant prospects of the undertaking. At that time the venture was still decried in England as a colossal folly, and Bell's article was received with a shower of reproof. When the canal was opened, four years later, and speedily became one of the world's most important highways, the young correspondent's prophecy was amply fulfilled. He was appointed by *The Times* to send reports of news from Egypt, which he did for many years while carrying on his business as a cotton merchant. He kept the outside world in close touch with Egyptian affairs, especially the profligate rule of the Khedive Ismail. The Arabi Pasha rebellion in 1882 gave him his chance. With unerring finger he pointed out the real instigators of the revolt, who were using Arabi as a tool to further their own purposes. The Anglo-French intervention was directly due to Bell's writings in *The Times;* it was he who drove Gladstone into the only act of foreign aggression that statesman was ever guilty of. When the French fleet withdrew from the harbor of Alexandria, the British squadron remained and bombarded the rebel positions in the forts, afterward landing troops. This proceeding led to the British occupation and ultimate absorption (17 Dec. 1914) of Egypt. Bell was an attentive eyewitness of these historic events, and his descriptions of them were masterpieces of journalistic composition. In 1890 Bell was invited to come to London and take over the management of *The Times.* That paper had just passed through a critical period. The disastrous Parnell case (q.v.) had cost *The Times* over a millon dollars and a strong hand was needed to guide the business side of the concern. For 21 years Bell labored with terrific energy in that post and finally died in his office chair while writing a letter respecting newspaper copyright. He led the paper into avenues distinct from journalism, such as publishing the 9th and 10th editions of the 'Encyclopedia Britannica,' *The Times* 'Atlas,' *The Times* 'History of the War in South Africa,' and instituted *The Times* Book Club. He chartered a steamer for a *Times* correspondent to follow the naval operations of the Russo-Japanese War; established a private wireless system and inaugurated the first service of wireless press messages across the Atlantic. A man of immense stature, with a leonine head and merciless driving force, he spared neither himself nor those who worked under him. He had the gift of choosing the right men for allotted positions, and never failed to encourage merit and reward those who had achieved any success for the paper. He published three books on Egypt.

**BELL, Clark**, American writer on medical jurisprudence: b. Whitesville, N. Y., 12 March 1832. After practising law for eight years he became, in 1861, assistant district attorney of Steuben County, N. Y. Later he became attorney for the Union Pacific Railroad and as such drew up the act by which Congress authorized its construction. In 1883 he became editor of the *Medico-Legal Journal,* in which position he continued for many years. He was president of the Medico-Legal Society for 16 terms and organized the first Congress on Tuberculosis. In 1900 and in 1906 he was a delegate to the International Medical Congress, held respectively at Paris and Lisbon. Among his works are 'Bell's Medico-Legal Studies' (11 vols., 1893); 'Judicial History of the Supreme Court of the United States and Provinces of North America' (1895); 'Spiritism, Telepathy and Hypnotism' (1902, 2d ed., 1904).

**BELL, Currer.** See BRONTE, CHARLOTTE.

**BELL, Digby (Valentine)**, American actor and singer in comic opera: b. Milwaukee, Wis., 1849; d. 20 June 1917. His earlier years were spent in the steamship business, but later he was encouraged to take up the cultivation of his voice in Naples. His first appearance was made in Malta, in 1876. Since then he has been prominent on the American comic opera stage, touring the United States and Canada with Augustin Daly, the McCaul Opera Company and the Duff Opera Company. His most notable successes have been in the Gilbert and Sullivan operas, especially as the Admiral in 'Pinafore,' as Ko-Ko in 'Mikado' and in 'Patience.' He played Sam Weller with De Wolf Hopper in 'Mr. Pickwick' and also starred in 'Tar and Tartar.' In 1912 he appeared in a revival of 'The Mikado.' Since then he has become a motion picture star.

**BELL, Ellis.** See BRONTE, EMILY JANE.

**BELL, George Joseph**, Scottish lawyer, brother of Sir Charles and John Bell: b. Edinburgh, 26 March 1770; d. 1843. He passed as advocate in 1791, and became one of the first authorities on the subject of mercantile jurisprudence and the law of bankruptcy. This distinction he earned for himself by the publication of a work which first appeared in 1804, under the title of a 'Treatise on the Laws of Bankruptcy,' but in subsequent editions was extended and appeared as 'Commentaries on the Laws of Scotland and on the Principles of Mercantile Jurisprudence.' This work, notwithstanding recent changes in the law, is still a standard. Besides the work above mentioned, he published 'Principles of the Law of Scotland,' the 10th edition of which was issued in 1897; and other works.

**BELL, Henry**, Scottish engineer, the first successful applier of steam to the purposes of navigation in Europe: b. Torphichen, Linlithgowshire, 7 April 1767; d. Helensburgh, 14 Nov. 1830. He practised for several years, at Glasgow, the craft of a house carpenter, but in 1808 removed to Helensburgh, where he continued to prosecute his favorite task of mechanical scheming, without much regard to the ordinary affairs of the world, though he became proprietor of baths there. The application of steam to navigation had already been attempted by Mr. Miller of Dalswinton (among others), who, in 1788, had a vessel constructed, propelled by a small engine and paddle-wheel, the scene of operations being a loch on his own property in Dumfriesshire. Some further experiments were made, yet the scheme had no practical result for several years. Henry Bell seems to have turned his attention to the subject before the end of the century, and in January 1812 produced the *Comet,* a vessel 40 feet long, which was found in a great measure to answer the purpose contemplated. This vessel could make way against a head tide in the river at the rate of five miles an hour, and continued to ply on the Clyde for a number of years. It may be mentioned that Mr. Robert Fulton, an American engineer, had launched a boat upon this principle in 1807, and that it performed long voyages upon the Hudson River; but it has been proved that Fulton had derived assistance in the construction of his vessel from Bell, who must therefore be allowed the praise of having done, in his own country, what all other men, notwithstanding the superior advantages of skill and capital, had failed in doing. Bell lived to see the bosom of the Clyde dotted far and wide by innumerable copies of his own invention; to know that steamboats promised to give a new turn to the art of general warfare; yet he reaped for himself little advantage. While mankind at large were enjoying the blessings which he had pointed out to them, he approached the confines of old age with the prospect of hardly the average comforts which attended that stage of existence in the humbler walks of society. Touched by his condition, a number of benevolent individuals instituted a subscription in his behalf, and it is creditable to the good feeling of the citizens of Glasgow and other places that a considerable sum was raised. The trustees on the river Clyde also gave him an annuity of £100, which he enjoyed for several years, the half of which sum was continued to his widow. A monument was erected to his memory at Dunglass Point on the Clyde. See STEAM VESSELS.

**BELL, Henry Glassford**, Scottish lawyer and author: b. Glasgow 1803; d. 1874. He founded the 'Edinburgh Literary Journal' 1828, was admitted to the bar in 1832, became one of the most esteemed Scottish mercantile lawyers of his day and sheriff of Lanarkshire 1867–74. He published a spirited defense of Mary Queen of Scots (1830), 'Summer and Winter Hours' (1831); 'My Old Portfolio' (1832); 'Romances and Minor Poems' (1866).

**BELL, Henry Haywood**, American naval officer: b. North Carolina 1808; d. 11 Jan. 1868. He was appointed a midshipman in 1823, and served on the *Grampus* when she was engaged in clearing the Cuban coast of pirates. For many years he served with the East Indian squadron, and commanded one of the vessels of the squadron which, in November 1856, destroyed four forts near Canton, China. Shortly after the outbreak of the Civil War he became fleet captain of the Western Gulf squadron. He commanded one of the three divisions of the fleet which captured New Orleans. In 1865 he took command of the East India squadron with the rank of commodore; in 1866 was promoted to rear-admiral and, after resigning his command, he was drowned at the mouth of the Osaka River, Japan.

**BELL, Isaac,** American philanthropist: b. New York, 4 Aug. 1814; d. there, 30 Sept. 1897. He began his business life in a banking house when 14 years old, and in 1836 became interested in large financial and other concerns. About this time he began to devote himself to the work of benevolent institutions, and was president of the department of charities and correction 1857–73. It was principally through his efforts that the Bellevue Hospital, and also the Bellevue Hospital Medical College, were founded. In connection with the first institution he established the system of ambulance service. He was also largely instrumental in the establishment of the Normal College, and was responsible for the schoolship *Mercury*, which came under the control of the department of charities and correction, and of the *Saint Mary's*, as well, loaned by the Navy Department to the Department of Education, of which he was also for a long time a member. During the Civil War he was active in raising and disbursing money for the benefit of New York volunteers, and in aiding soldiers' wives, widows and orphans.

**BELL, James,** Scottish geographer: b. Jedburgh 1769; d. 1833. After receiving a liberal education he served an apprenticeship to the weaving business, and in 1790 commenced the manufacturing of cotton goods upon a large and respectable scale. In the depression occasioned by the shock of the French Revolution in 1793, he was reduced to the condition of a common warper; but having relinquished that line of life, he was about the year 1815 engaged to improve the 'Glasgow System of Geography,' a work which had met with considerable encouragement, and was now, chiefly by the labors of Mr. Bell, extended to five volumes. It was well received by the public, and formed the basis of his principal work, 'A System of Popular and Scientific Geography,' published at Glasgow in 1830 in six volumes. His annotated edition of 'Rollins' Ancient History' (1828), was a notable piece of work. His 'Gazetteer of England and Wales' was in the course of publication at the time of his death.

**BELL, James,** Canadian physician: b. North Gower, Ontario, 10 Oct. 1852; d. 11 April 1911. He was graduated at McGill University in 1877; became house surgeon of the Montreal General Hospital the same year, and medical superintendent of it in 1881. In 1885 he became a member of the hospital staff as assistant surgeon, and in 1886 full surgeon. In 1894 he was made consulting surgeon to the General Hospital, surgeon of the Royal Victoria Hospital of Montreal, and professor of clinical surgery in McGill University.

**BELL, James Franklin,** American soldier: b. Shelbyville, Ky., 9 Jan. 1856. He was graduated from the United States Military Academy 1878; he was appointed additional second lieutenant, 14 June 1878; second lieutenant, 28 June 1878; transferred to 7th Cavalry, 9 Aug. 1878; first lieutenant 1890; major of Engineers, United States Volunteers, 1898; captain, United States army, 2 March 1899; major, assistant adjutant-general, United States Volunteers, 17 April 1899; colonel of 36th Volunteer Infantry, 5 July 1899; brigadier-general of volunteers, 5 Dec. 1899; brigadier-general, United States army, 19 Feb. 1901; major-general, 3 Jan. 1907. He served on plains in 7th United States Cavalry, 1878–94; captured band of half-breed Cree Indians, near Fort Buford, S. D., 1883; in Sioux campaign, Pine Ridge, S. D., 1891; adjutant of regiment and secretary to the Cavalry and Light Artillery School 1891–94; aide to Gen. J. W. Forsyth in California, Arizona and Washington; was awarded Congressional Medal of Honor, 27 Nov. 1899, "for most distinguished gallantry in action, 9 Sept. 1899, near Porac, Luzon, P. I."; commanded 4th brigade, second division, 8th Army Corps, and third district, department of northern Luzon, to July 1900; provost marshal-general of Manila, P. I., to Feb. 1901; commanded first district, department of northern Luzon, to November 1901, and third brigade, department of southern Luzon to December 1902; returned to the United States in 1903; commandant of Infantry and Cavalry School, Signal School and Staff College to April 1906; chief of staff, United States army, April 1906 — April 1910; commander of the Philippines Division, January 1911 — April 1914. Assigned to command of mobilized second division, United States army, May 1914, which he commanded until demobilized in October 1915, then assigned to command Western department, with headquarters at San Francisco, December 1915. In 1917 Major-General Bell was placed in charge of the 77th Division of the New National Army, consisting of draft quotas from New York city and State, at Camp Upton, Yaphank, Long Island.

**BELL, James Montgomery,** American soldier: b. Williamsburg, Pa., 1 Oct. 1837. He entered the 86th Ohio Infantry, and served with distinction throughout the Civil War, being twice brevetted for gallant and meritorious services in the battles of the Wilderness and Ream's Station, Va. Entering the regular army as second lieutenant in 7th Cavalry, 1866, he took part in the Cheyenne and Arapahoe war, 1867–69; the Sioux wars, 1876–81, and the Nez Percés war, 1877. He received a brevet-commission of lieutenant-colonel for gallant services in action against the Indians at Cañon Creek, Mont., 13 Sept. 1877. He commanded Bell's expeditionary brigade to the Camarines provinces, southern Luzon, 1900–01, and was appointed brigadier-general of volunteers, 20 Jan. 1900; was appointed brigadier-general, United States army, 17 Sept. 1901, and retired, 1 Oct. 1901.

**BELL, John,** Scottish traveler: b. Antermony, Stirlingshire, 1691; d. there, 1 July 1780. Having gone to Saint Petersburg in 1714, after the completion of his studies, he was sent as medical attendant on an embassy to the Sophy of Persia. On his return from Persia to the Russian capital in 1718 he found another embassy preparing to set out for China and obtained an appointment in it also. The embassy arrived at Pekin "after a tedious journey of exactly 16 months," and returned in January 1722. The Tsar now determined to undertake an expedition into Persia to assist the Sophy against the Afghans, his subjects, who had seized Kandahar and possessed themselves of several provinces on the frontiers toward India. Bell's former journey to Persia gave him peculiar advantages and he was accordingly engaged to accompany the army to Derbend. In 1737 he was sent to Constantinople by the Russian

chancellor and the British Minister at the Russian court. He afterward settled at Constantinople as a merchant, and about 1746 married a Russian lady and returned to Scotland. The only work written by him is his 'Travels from Saint Petersburg in Russia to Various Parts of Asia' (1763).

**BELL, John,** Scottish surgeon: b. Edinburgh, 12 May 1763; d. Rome, 15 April 1820. He was a brother of Sir Charles and George Joseph Bell, and after completing his professional education traveled for a short time in Russia and the north of Europe, and on his return began to deliver lectures on surgery and midwifery. These lectures, delivered between 1786 and 1796, were very highly esteemed and speedily brought him into practice as a consulting and operating surgeon. The increase of his private practice, indeed, rendered it necessary for him, in 1796, to discontinue his lectures, and from that time forward he devoted himself to his patients and to the preparation of the several publications of which he was the author. Patients came to him from all quarters, both of Scotland and England, and even from the Continent; and during that interval he performed some of the most delicate and difficult operations in surgery. The exclusion of visiting surgeons from Edinburgh infirmary led to an acrimonious controversy between Bell and Professor Gregory. Early in 1816 he was thrown by a spirited horse and never entirely recovered from the effects of the accident. He was the author of 'The Anatomy of the Human Body' (1793–1802; 3d ed., with plates by Charles Bell, 1811); 'Engravings of the Bones, Muscles and Joints,' illustrating the first volume of the 'Anatomy of the Human Body,' drawn and engraved by himself (1794, 3d ed.); 'Engravings of the Arteries,' illustrating the second volume of the 'Anatomy of the Human Body' (1801); 'Discourses on the Nature and Cure of Wounds' (1795); 'The Principles of Surgery' (1801–08).

**BELL, John,** American statesman: b. near Nashville, Tenn., 15 Feb. 1797; d. Cumberland Iron Works, Tenn., 10 Sept. 1869. Graduating at Cumberland College (now University of Nashville) in 1814, he practised law until 1827, when he was elected to Congress from 1827–41; he then became Secretary of War in President Harrison's Cabinet, but resigned when President Tyler withdrew from the Whig party. From 1847 to 1859 he was senator from his State. He was chairman of several important committees and vigorously opposed the Kansas-Nebraska bill and the Lecompton Constitution framed for Kansas. In May 1860 he was nominated for President by the Constitutional Union party (q.v.), but was defeated. During the Civil War he took no active part in politics.

**BELL, John,** English sculptor: b. Hopton, Suffolk, 1811; d. 25 March 1895. His best-known works are the 'Eagle Slayer,' 'Una and the Lion,' 'The Maid of Saragossa,' 'Imogen,' 'Andromeda,' 'The Wounded Clorinda'; statues of Lord Falkland, Sir Robert Walpole, Newton, Cromwell, etc., and the Wellington Memorial in the Guildhall. He was one of the sculptors of the Guards' Monument in Waterloo Place, London, and the marble group of the United States directing the progress of America for the Albert Memorial in Hyde Park, a replica of which in terra cotta is in Washington. His earlier works were notable in their departure from the frigid classicism that had up to then hampered expression in English sculpture, but his later works were marred by an obtrusive religiosity.

**BELL, John Joy,** Scottish author: b. 7 May 1871. He was educated at Kelvinside Academy, Morrison's Academy, Grieff and Glasgow University. His first novel, 'New Noah's Ark,' was published in 1898; but it was not until 1902 that he made a great popular hit with a series of sketches of humble life, 'Wee Macgreegor,' in which the broad Glasgow dialect was effectively employed, the hero taking his place at once among the notable creations of Scottish fiction. The story was dramatized in 1912. 'Wee Macgreegor Again' (1904); 'Wee Macgreegor Enlists' (1915), are continuations of the series and in the same vein of dialect fiction are 'Mistress M'Leerie' (1903); 'Oh Christina' (1909); 'Coortin' Christina' (1913) and 'Mr. Pennycook's Boy' (1905). He is also author of 'Clyde Songs' (1906–11); 'A Kingdom of Dreams' (1914), etc.

**BELL, John Keble** (KEBLE HOWARD): English playwright and novelist: b. 8 June 1875. He was educated at Worcester College, Oxford, was editor of 'The Sketch' (1902–04); and founded the Croydon Repertory Theatre in 1913. He is the author of some 10 plays and his output in fiction has been considerable.

**BELL, Joseph,** Scottish surgeon and diagnostician: b. Edinburgh 1837; d. Milton Bridge, Midlothian, 4 Oct. 1911. His father, grandfather and great-grandfather had been surgeons before him. While his father was president of the Royal College of Surgeons he was elected a fellow of the college. Upon his father's death he succeeded him in that high and important office. While a medical student at the Edinburgh University Sir Arthur Conan Doyle became so impressed by the successful deductive powers of Dr. Bell, from what appeared to be minute details in diagnosis and prognosis, that he became the prototype of the former's romantic detective hero "Sherlock Holmes."

**BELL, Lilian,** American novelist: b. Chicago, Ill., 1867. She began to write at the age of eight and afterward became widely known as a contributor to periodicals. In 1900 she was married to Arthur Hoyt Bogue, but continues to write under her maiden name. Her writings include 'The Love Affairs of an Old Maid' (1893); 'A Little Sister to the Wilderness' (1895); 'The Under Side of Things' (1896); 'From a Girl's Point of View' (1897); 'The Instinct of Stepfatherhood' (1898); 'As Seen by Me' (1900); 'The Expatriates' (1900); 'Yessum' (1901); 'Abroad With the Jimmies' (1902); 'Hope Loring' (1902); 'Sir John and the American Girl' (1901); 'The Interference of Patricia' (1903); 'A Book of Girls' (1903); 'At Home with the Jardines' (1904); 'Carolina Lee' (1906); 'Why Men Remain Bachelors, and Other Luxuries' (1906); 'Concentrations of Bee' (1909); 'Angela's Quest' (1910); 'The Runaway Equator' (1912); 'The Story of the Christmas Ship'

(1915); 'About Miss Mattie Morningglory' (1916); 'The Land of Don't-Want-To' (1916).

**BELL, Robert,** Irish journalist and miscellaneous writer: b. Cork, 16 Jan. 1800; d. London, 12 April 1867. He settled in London in 1828, edited an important weekly paper, the *Atlas,* for several years, and afterward the *Monthly Chronicle, Mirror* and *Home News.* He compiled several volumes of 'Lardner's Cabinet Cyclopædia'; wrote three plays, 'The Ladder of Gold,' a novel (1856); 'Hearts and Altar,' a collection of tales (1852), and did a great deal of miscellaneous literary work; but is best known by his annotated edition of the 'British Poets' (29 vols., 1854–57).

**BELL, Robert,** Canadian geologist: b. Toronto, Ontario, 3 June 1841. He was educated at McGill and Queen's universities, and in 1867 joined the Canada Geological Survey, and in 1900 was an assistant director of it. In 1861 he was elected a member of the American Institute of Mining Engineers; in 1881 became a fellow of the Royal Society of Canada, and in 1888–89 was a member of the Ontario commission which reported on the mineral resources of that province. During his connection with the geological survey he made more extensive explorations throughout the Dominion than any other man. He was the author of about 130 reports and papers, a list of which is found in the 'Biblio of the Royal Society.'

**BELL, Thomas,** English zoologist: b. Poole, Dorset, 1792; d. Selborne, Hampshire, 1880. He studied medicine at Guy's and Saint Thomas' hospitals, London, became a member of the Royal College of Surgeons in 1815 and soon secured a large practice as a dentist. In 1832 he was appointed professor of zoology at King's College, London. Latterly he lived for a number of years at Selborne in the residence that had belonged to the celebrated Gilbert White. He was president of the Ray Society 1843–59, and of the Linnean Society 1853–61. His best-known separate works are his histories of 'British Quadrupeds' (1837, revised 1874); 'British Reptiles' (1839); and 'British Stalk-eyed Crustacea' (1853). In 1877 he published an excellent edition of White's 'Natural History of Selborne' with a memoir of its author.

**BELL,** a hollow vessel, which, by its vibrations when struck, gives forth sounds; whence its name, from the old Saxon word *bellan,* to bawl or bellow. It is an instrument of great antiquity, being spoken of by Hebrew writers, as in Exodus xxviii, where golden bells are prescribed as appendages to the dress of the high priest, that notice may thus be given of his approach to the sanctuary. And at this day the bell is used for a similar purpose before the priest, in Roman Catholic countries, as he proceeds to administer the Holy Viaticum to the soul that is passing away; and so when the bell is tinkled, in administering the sacrament, by the same priest, it is in pursuance of a custom founded on the ancient Hebrew use of the bell. More intimately than any other instrument are bells associated with the religious and imaginative, as also with the most joyous and the saddest feelings of mankind. The metal from which bells are usually made (by founding), is an alloy, called bell-metal, commonly composed of 80 parts of copper and 20 of tin. The proportion of tin varies, however, from one-third to one-fifth of the weight of the copper, according to the sound required, the size of the bell and the impulse to be given. The clearness and richness of the tone depend upon the metal used, the perfection of its casting, and also upon its shape; it having been shown by a number of experiments that the well-known shape with a thick lip is the best adapted to give a perfect sound. The depth of the tone of a bell increases in proportion to its size. A bell is divided into the body or barrel, the ear or cannon, and the clapper or tongue. The lip or sound bow is that part where the bell is struck by the clapper.

The sound of a bell is a compound tone, presenting five and in many instances more notes to the ear. There is a great difference between the harmonics of a bell and of a vibrating string. In the case of the former a minor third is not infrequently one of the loudest tones next to the fundamental tone. When a bell is properly struck the first note which attracts the attention of the ear is known as the strike note, tap note or fundamental, and forms what is called "the" note of the bell. The low sound heard after the strike note has lost its intensity is called the hum note, and the octave above the strike note the nominal. There are also present a minor third and a perfect fifth in the first octave, and a major third and a perfect fifth in the second octave. Very few bells agree with these conditions. Generally the hum note is a sixth or seventh, and in rare cases a ninth below the strike note. The nominal is somewhere about an octave or a ninth above the strike note, and the other notes diverge accordingly. Bells that are swung are more likely to conform to the conditions than those that are struck.

Bells were used very early in the form of cymbals and hand bells in religious services. In Egypt the feast of Osiris was announced through the ringing of bells. Bronze bells have been found in Assyria. Bells of gold were worn by Aaron and the high priests of the Jews on the border of their robes, and in Athens the priests of Cybele used them in their offerings. The Romans also used bells which they called tintinabula, to announce the public assemblies, and, according to Suetonius, Augustus had a bell suspended before the temple of Jupiter. In the Christian churches a similar custom early came into use, though it is not known that in the first Christian churches divine service was announced by any such method. They were used, however, in the early monasteries to announce the hours of prayer. Generally they were made of tubes struck with a hammer. They are said to have been first introduced into Christian churches about 400 A.D., by Paulinus, bishop of Nola in Campania (whence campana and nola as old names of bells); although their adoption on a wide scale does not become apparent until after the year 550, when they were introduced into France. They are rung to summon monks and choir nuns to the office, and the people to mass, to announce the Angelus, to toll during funerals and peal on occasions of joy. They are blessed with elaborate ceremonies and consecrated or "baptized" in honor of some saint.

Until the 13th century they were of comparatively small size, but after the casting of the Jacqueline of Paris (6½ tons) in 1400, their weight rapidly increased. Among the more famous bells are the bell of Cologne, 11 tons, 1448; of Dantzic, 6 tons, 1453; of Halberstadt, 7½, 1457; of Rouen, 16, 1501; of Breslau, 11, 1507; of Lucerne, 7½, 1636; of Oxford, 7½, 1680; of Paris, 12⅝, 1680; of Bruges, 10¼, 1680; of Vienna, 17¾, 1711; of Moscow (the monarch of all bells), 193, 1736; three other bells at Moscow ranging from 16 to 31 tons, and a fourth of 80 tons, cast in 1819; the bell of Lincoln (Great Tom), 5½, 1834; of York Minster (Great Peter), 10¾, 1845; of Montreal, 13½, 1847; of Westminster (Big Ben), 15½, 1856; Saint Stephen, 13½, 1858; the great bell of Saint Paul's, 17½, 1882. Others are the bells of Ghent, 5; Görlitz, 10¾; Saint Peter's, Rome, 8; Antwerp, 7¼; Olmütz, 18; Brussels, 7; Novgorod, 31; Pekin, 53½. (See BELLS; CHIMES). Consult Gatty, 'The Bell: Its Origin and Uses' (1848); Lukis, 'Church Bells and Their Founders' (1857); Andrews, 'History of Church Bells' (1885); Otte, 'Glockenkunde' (1884); Tyack, 'A Book About Bells' (1899).

**BELL, Liberty**, the bell in Independence Hall, Philadelphia, that was rung to announce the adoption of the Declaration of Independence by the Continental Congress. The bell was cast in London by Robert Charles and cost about $500. The specifications provided that it was to be made by the best workmen, to be examined carefully before being shipped and to contain, in well-shaped letters around it, the inscription: "By order of the Province of Pennsylvania, for the State House in the City of Philadelphia, 1752." An order was given to place underneath this the prophetic words from Leviticus xxv, 10: "Proclaim liberty throughout the land and to all the inhabitants thereof." The reason for the selection of this text has been a subject of much conjecture, but the true reason is apparent when the full text is read. It is as follows: "And ye shall hallow the 50th year and proclaim liberty throughout the land and to all the inhabitants thereof." In selecting the text the Quakers had in memory the arrival of William Penn and their forefathers more than half a century before. In August 1752, the bell arrived, but though in apparent good order, it was cracked by a stroke of the clapper while being tested. It could not be sent back as the captain of the vessel who had brought it over could not take it on board. Two skilful men undertook to recast the bell, a bell being provided which pleased very much. But it was found to be defective also. The original bell was considered too high in tone, and in an attempt to correct this fault, too much copper was added. There were a great many witticisms on account of the sound failure, and ingenious workmen undertook to recast the bell, which they successfully did, and it was placed in condition in June 1753. On Monday, 8 July (not the 4th), at noon, true to its motto, it rang out the memorable message of "Liberty throughout the land and to all the inhabitants thereof." For years the bell continued to be rung on every festival and anniversary, until it eventually cracked 8 July 1835, while being tolled in memory of Chief Justice Marshall. An ineffectual attempt was made to cause it to continue serviceable by enlarging the cause of its dissonance and clipping the edges. It was removed from its position in the tower to a lower story, and only used on occasions of public sorrow. Subsequently, it was placed on the original timbers in the vestibule of Independence Hall, and in 1873 was suspended in a prominent position immediately beneath where a larger bell, presented to the city in 1866, now proclaims the passing hours. In 1893 it was taken to Chicago and placed on exhibition at the World's Columbian Exposition. In 1915 it was taken to the Panama-Pacific Exposition at San Francisco and placed on exhibition.

**BELL, Song of the** ('Lied von der Glocke'), a poem which is generally considered Schiller's masterpiece. It was first published in the *Musenalmanach*, in 1800. In this work the various operations attending the casting of the bell are made to symbolize the whole course of human life.

**BELL-BIRD**, the name given to birds in various parts of the world, which utter bell-like notes; especially the "campanero" (*Chasmorhynchus niveus*), one of the chatterers of the South American family, *Cotingidæ*. It resembles, in form and size, the North American wax-wing, but is pure white, and has a remarkable appendage upon its forehead. This consists of a fleshy, tapering caruncle, which is black, thinly covered with star-like tufts of minute feathers. This caruncle ordinarily hangs loosely down at the side of the beak, but in moments of excitement becomes swollen and much extended, reaching a length of even five inches. This seems to be produced by air forced into its elastic tissues from the bird's lungs, and occurs whenever the characteristic notes are uttered. The bird's voice has been described by many travelers as like the sound of a loud, clear bell, which rings out over the forest at mid-day, when most other birds are silent. Waterton said: "You hear his toll and then a pause for a minute, then another toll, and then a pause again, and then another toll, and so on." Others have compared the sound to a blow upon an anvil, and all agree that it can be heard a great distance. Several other species exist in central and southern South America, all of which have caruncles, and utter extraordinary, ringing notes; but the former belief, that the loud voice was aided by these hollow appendages, is now known to be erroneous. These birds go about in small flocks, which flit through the tree-tops, and feed mainly upon forest fruits. They have been particularly studied by J. J. Quelch, a naturalist of British Guiana, an account of whose interesting investigations will be found in *The Field* of London, for 26 Nov. 1892.

In Australia, the name "bell-bird" is given to one of the honey-suckers (q.v.), whose ching-ching is welcomed by travelers in the forest as an indication that water is near. The "bell-bird" of New Zealand is another honey-sucker (*Anthornis melanura*), whose voice, usually heard in chorus, resembles the tinkling of a silver bell.

**BELL, BOOK, and CANDLE**, a mode of excommunication employed in the Roman Catholic Church between the 7th and 10th cen-

turies. After sentence read, the book is closed, a lighted candle thrown to the ground, and a bell tolled as for one dead.

**BELL-FLOWER.** See CAMPANULA.

**BELL ROCK, or INCH CAPE,** a dangerous reef of sunken sandstone rocks on the east coast of Scotland, about 12 miles from Arbroath, opposite the mouth of the Tay. It is about 700 yards long and at certain tides a great part of it is uncovered, and directly in the way of vessels making for the firths of Forth and Tay. The Inch Cape or Bell Rock reef was long the terror of seamen, and on it numerous vessels were wrecked. At a very early period the Inch Cape Rock was unhappily too well known, and tradition has it that one of the abbots of Aberbrothock succeeded in placing a bell upon it (hence the name), in such a way as to be rung by the motion of the waves, to warn sailors of its proximity. The legend tells us that a notorious Dutch sea pirate cut the bell from the rock, and on returning with his ship laden with spoils from one of his piratical expeditions, he and his crew perished, as an old historian has it, "by the righteous judgment of God," for want of the signal which he had so wantonly removed. On this legend Southey has founded his well-known ballad of 'The Inch Cape Rock.' The lighthouse on the rock was designed by Robert Stevenson in 1800. It was erected in 1810 and is 100 feet high.

**BELL-SMITH, Frederic Marlett,** English artist: b. London, 26 Sept. 1846. He went to Canada in 1866 and was for seven years art director at Alma College, Saint Thomas, and teacher of drawing in the public schools of London, Ontario. About 1888 he became a portrait and figure painter, but he is best known as a painter of landscapes. In 1894 he produced 'Lights of a City Street,' his greatest achievement up to that year, and later two canvases depicting incidents connected with the death of Sir John Thompson. He is president of the Ontario Society of Artists.

**BELLA GIARDINIERA,** bĕllȧ-zhär-dē-nä'rȧ, **La,** a celebrated painting by Raphael, now in the Louvre. It represents the Madonna with the holy child, and the infant Saint John.

**BELLADONNA, or DWALE, Deadly Nightshade** (*Atropa belladonna*), a perennial disagreeable-smelling herb of the *Solanaceæ* family, is a native of the region from southern Europe to India, but widely naturalized in civilized countries. It is an erect plant which sometimes attains a height of six feet; has entire, ovate leaves, purple, bell-shaped, nodding axillary flowers, single or in pairs, and shining, black, sweetish berries as large as large currants. The plant has long been reputed poisonous but is used in medicine, especially by oculists, because of its property of dilating the pupil of the eye. It is said to derive its name, belladonna ("beautiful lady"), from its use as a cosmetic for distending the pupil and giving the eye a bright glistening appearance and also from the use of the juice for staining the skin. Its names, deadly night shade, and dwale (which latter is believed by some to come from the same source as the French *deuil*, sorrow, and by others form the Anglo-Saxon dull, because of its stupefying effects), refer to popular belief in the plant's poisonous properties. The generic name came from Atropos, the fate who cut the thread of life.

**BELLADONNA LILY.** See AMARYLLIDACEÆ.

**BELLAIRE,** bĕl-lär', Ohio, city in Belmont County, on the Ohio River, and several railroads, five miles south of Wheeling, W. Va. The river is here crossed by a costly iron railroad bridge. Bellaire is the centre of a region rich in coal, iron, cement, brick, clay and limestone, and has manufactories of stoves, glass, carriages, boilers and foundry and machine shop products. The United States census of manufactures for 1914 reported 40 industrial establishments, employing 2,865 persons, of whom 2,603 were wage earners who receive annually $1,566,000 in wages. The capital invested aggregated $7,671,000, and the value of the year's output was $9,278,000; of this, $2,892,000 is the value added by manufacture. Bellaire adopted the Federal plan of government in 1910, and owns its waterworks. The city has a national bank, high-grade educational institutions, daily and weekly newspapers, and an assessed property valuation of over $3,000,000. Pop. (1910) 12,946; (1914) 14,000.

**BELLAMONT, or BELLOMONT, Richard Coote** (EARL OF), royal governor of New York and Massachusetts: b. 1636; d. New York, 5 March 1701. He was returned to Parliament for Droitwich in 1688, was a strong supporter of William III, was raised to the earldom of Bellamont in the peerage of Ireland 1689, and continued to hold his seat in the Commons. He was appointed governor of New York and Massachusetts in May 1695, but did not arrive in New York until May 1698. His administration was uneventful, his time having been occupied in the pursuit of the pirates who infested the coast, one of whom, the notorious Kidd, he had assisted in fitting out for the suppression of illicit trade and piracy, but whom he ultimately secured and sent to England in 1700. He was disliked by the aristocratic party in New York, but was very popular in New Hampshire and Massachusetts and distinguished by an "honorable sympathy for public freedom." Hutchinson speaks of Bellamont as being a hypocrite in a pretended devotion to religion. It appears, however, that while living at Fort George, in New York, he passed much time in meditation and contrition for his youthful excesses. Consult De Peyster, 'Life and Administration of Richard, Earl of Bellamont' (1869).

**BELLAMY, Edward,** American author: b. Chicopee Falls, Mass., 29 March 1850; d. there, 22 May 1898. He was educated in Germany; admitted to the bar; was on the staff of the *Evening Post* of New York in 1871–72; and on his return from the Sandwich Islands in 1877, founded the Springfield *News*. He is best known by his novel 'Looking Backward' (1888), a socialistic work, of which an immense number of copies were sold in two years. This led to the formation of Nationalist clubs, in which work Mr. Bellamy took active part. His other books are 'Six to One: a Nantucket Idyl' (1878); 'Dr. Heidenhoff's Process' (1880); 'Miss Ludington's Sister' (1884); 'Equality' (1897); 'The Duke of Stockbridge' (1901), a sequel to 'Looking Backward.'

**BELLAMY, Joseph,** American clergyman and educator: b. North Cheshire, Conn., 20 Feb. 1719; d. 6 March 1790. In 1740 he became pastor of the church in Bethlehem, Conn., where he remained until his death. About 1742 he established a divinity school, in which many celebrated clergymen were trained. Among his published works, besides his 'Sermons,' are 'True Religion Delineated' (1750); 'The Nature and Glory of the Gospel' (1762), and 'The Half-Way Covenant' (1769). An edition of his 'Complete Works' appeared (3 vols., New York 1811–12; new ed. with Memoir by Dr. Tryon Edwards, 2 vols., Boston 1850).

**BELLAMY, Samuel,** a notorious pirate, was wrecked in his ship, the *Whidah,* of 23 guns and 130 men, off Wellfleet, on Cape Cod, in April 1717, after having captured several vessels on the coast and an indecisive engagement with a French ship proceeding to Quebec. Only one Indian and one Englishman escaped of his crew. Six of the pirates, who had been run ashore when drunk a few days previous, by the captain of the captured vessel, were hung in Boston in November 1717.

**BELLANGÉ,** bĕl-läṅ-zhā, **Hippolyte,** French painter: b. Paris 1800; d. 1866. Attention was first directed to him by his painting of 'The Return of Napoleon from Elba,' exhibited in 1834. He was director of the museum at Rouen, 1837–53. Among his many noted battle pieces are 'Battle of Wagram' (1837); 'Kellerman's Charge at Marengo' (1847); 'Battle of the Alma' (1855); 'Assault on Malakoff' (1859); 'Cuirassiers at Waterloo' (1865); 'The Guard Dies' (1866).

**BELLARMINO,** bĕl-lär-mē'nō, or **BELLARMINE, Roberto Francesco Romolo,** Italian cardinal and controversialist: b. Monte Pulciano in Tuscany, 4 Oct. 1542; d. Rome, 17 Sept. 1621. At the age of 18 he entered the College of Jesuits, where he soon distinguished himself; and his reputation caused him to be sent into the Low Countries to oppose the progress of the reformers. He was ordained in 1569 by Jansenius, bishop of Ghent, and placed in the theological chair of the University of Louvain. After a residence of seven years he returned to Italy, and was sent by Sixtus V to France, as companion to the legate. He was made a cardinal on account of his learning, by Clement VIII, and in 1602 created archbishop of Capua. At the elections of Leo XI and Paul V he was thought of for the pontificate, and might have been chosen had he not been a Jesuit. Paul V recalled him to Rome; Bellarmino had the double merit with the court of Rome of supporting her temporal power and spiritual supremacy to the utmost, and of strenuously opposing the reformers. The talent he displayed in the latter controversy called forth similar ability on the Protestant side; and for a number of years no eminent divine among the reformers failed to make his arguments a particular subject of refutation. The great work which he composed in this warfare is entitled 'A Body of Controversy,' written in Latin, the style of which is perspicuous and precise, without any pretension to purity or elegance. He displays a vast amount of Scriptural learning, and is deeply versed in the doctrine and practice of the Church in all ages. His maxims on the right of pontiffs to depose princes caused his work on the temporal power of the Popes to be condemned at Paris. On the other hand, it did not satisfy the court of Rome, because it asserted, not a direct, but an indirect, power in the Popes in temporal matters; which reservation so offended Sixtus V, that he placed it among the list of prohibited books. His controversial works were published at Prague in 1721, and again at Mayence in 1842. Of his other works the most important is his 'Christianæ Doctrinæ Applicatio' (1603) — a work originally composed in Italian, but since translated into all European languages. He left an autobiography, which was reissued and annotated by Döllinger and Reusch (1887).

**BELLARY,** bĕl-lä'rę, or **BALLARI,** India, town in the presidency of Madras, capital of a district of the same name, 280 miles northwest of Madras. It is the headquarters of the troops belonging to the districts of Bellary and Kadapah, is connected by good roads with Belgaum, Bangalore, Hyderabad and Madras, and possesses two forts, one built on the summit, and the other on a lower eminence of a huge granite rock about two miles in circumference, and rising to the height of about 450 feet from the ground. Bellary is the terminus of a branch line of the Madras Railway, and carries on an active trade in cotton. Pop. (1911) 58,247.

**BELLAVITIS,** bĕl-lā-vē'tis, **Giusto,** COUNT, Italian mathematician: b. Bassano, 22 Nov. 1803; d. 6 Nov. 1880. In 1841 he became professor of mathematics at the Institute of Vicenza. Four years later he was appointed professor of geometry at Padua, later having algebra added to this subject. His writings include important contributions to modern geometry, especially in the field of projective geometry. His chief works are a series of textbooks on geometry (Padua 1851), a work on analytical geometry (Padua 1870) and a work on algebra (Padua 1875).

**BELLAY,** bĕ-lā, **Joachim du,** French poet, known as the French Ovid: b. about 1524; d. 1560. He joined Ronsard, Daurat, Jodelle, Belleau, Baif and De Tisard in forming the "Pléiade," a society the object of which was to bring the French language on a level with the classical tongues. Bellay's first contribution was 'La défense et l'illustration de la langue française.' His chief publications in verse are 'Recueil de poésie'; a collection of love-sonnets called 'L'Olive'; 'Les antiquités de Rome,' a series of sonnets; 'Les regrets'; and 'Les jeux rustiques.' His poems are strongly personal in tone, and they are suffused with plaintive melancholy. In 1555 he became canon of Notre Dame, and a short time before his death he was nominated archbishop of Bordeaux. A statue of Bellay was unveiled in Ancenis in 1894. Spencer translated some of his Roman sonnets into English; and there are translations of poems by him in Andrew Lang's 'Ballads and Lyrics of Old France.' Consult 'Life' by Seche (Paris 1880); Pater, 'Studies in the History of the Renaissance' (London 1888). His letters, edited by Nolbâe, appeared in 1883.

**BELLE-ALLIANCE,** bĕl-a-lę-äns, **La,** a farm 13 miles south of Brussels, famous as position occupied by the centre of the French army in the battle of Waterloo, 18 June 1815.

By the Prussians the battle was called that of Belle-Alliance.

**BELLE CHOCOLATIÉRE,** bĕl-shō-kō-lą-tyār', **La,** a noted portrait by the artist Liotard of the Princess Dietrichstein, who, prior to her marriage, was a waitress in a café in Vienna. The painting is now in the Dresden Gallery.

**BELLE ISLE,** Va., an island in the James River, opposite Richmond, where nearly 12,000 Federal prisoners were confined in 1863.

**BELLE-ISLE,** bĕl-ęl, or **BELLE-ISLE-EN-MER** (anciently VINDILIS), an island in the Bay of Biscay, belonging to France, in the department of Morbihan, eight miles south of Quiberon Point, about 11 miles long, and 6 miles across at the widest point. The soil is diverse, consisting of rock, salt marsh and fertile grounds. Palais is the capital. The island is of much interest historically. In 1747 the French fleet was defeated by Admiral Hawke off the island, and it was captured by the English in 1761. Pilchard and sardine fishing is the important industry. Pop. 10,000.

**BELLE ISLE, North, or BELLE ISLE,** an island, 15 miles north of Newfoundland and northeast of the Gulf of Saint Lawrence, about 21 miles in circuit. On the northwest side it has a small harbor, called Lark Harbor, within a little island close to the shore. At the eastern point it has another small harbor or cove that will admit only fishing shallops. A rescue station has been established for persons who may be shipwrecked. Its area is about 15 square miles. At its southern end is a lighthouse whose light is 470 feet above the sea, and visible for 28 miles. The narrow channel between Newfoundland and the coast of Labrador is called the Straits of Belle Isle. Steamers from Glasgow and Liverpool to the Saint Lawrence commonly go by this channel in summer as being the shortest route; in winter and spring it is choked with ice. Jacques Cartier passed through it in 1534.

**BELLE PLAINE,** Iowa, town in Benton County, on the Iowa River and the Chicago and Northwestern Railroad, 90 miles northeast of Des Moines, and 257 miles west of Chicago. It has flouring mills, furniture factories, creameries, machine shops, broom factories, a brick and tile factory, a brass foundry, a cannery and numerous artesian wells. It was founded in 1862 and was first incorporated in 1879. Pop. 3,121.

**BELLE SAVAGE** (Fr. *Belle Sauvage,* beautiful savage), an old inn, on Ludgate Hill, London, celebrated in coaching days, and frequently mentioned by Dickens and other writers dealing with that period. It was built around a court, and was admirably suited for an extemporized stage, it being possible to view the performance from the gallery above.

**BELLEAU,** bĕ-lō, **Rémy,** French poet: b. Nogent-le-Rotrou 1528; d. Paris, 16 March 1577. He made an elegant and spirited translation of 'The Odes of Anacreon' (1576). His 'Bergerie' (1572), a compound of prose and verse, is of unequal merit; but it contains some passages,— for example, the "April,"— which are of great beauty. His collected works are published (3 vols., 1867; 2d ed., 2 vols., 1879).

**BELLEEK CHINA,** a porcelain of very high quality distinguished by its iridescence, obtained by means of metallic washes, which are subsequently fired. It was invented by Brianchon, a Frenchman, in 1857. It was at first manufactured in England and France, but it became famous after a manufactory had been established in Belleek, Ireland, whence it derived its name.

**BELLEFONTAINE,** Ohio, city and county-seat of Logan County, on the Cleveland, C., C. & St. L., the Toledo & O. C. and the Ohio Electric railroads, four miles northwest of Columbus and 57 miles northeast of Dayton. It occupies the highest elevation in the State; and is surrounded by an agricultural region. It has extensive carshops and other railroad works; manufactures of iron and steel bridges, carriage and automobile bodies, tools, mattresses, harness, shoe blacking, flour and cement; two national banks; daily and weekly newspapers; an assessed property valuation of $2,250,000. The Lewiston reservoir, with an area of 13,400 acres and a holding capacity of 4,500,000,000 cubic feet, is situated about eight miles from Bellefontaine. The city was settled in 1818. The government is vested in a mayor, elected biennially, two directors, appointed by him, and a city council. An administrative board of education is elected by the people. The waterworks, gas and electric-light works and sewage system are owned and operated by the city. Pop. 8,238.

**BELLEFONTE,** Pa., borough and county-seat of Centre County, 87 miles northwest of Harrisburg, on the Pennsylvania Railroad. It has important lime quarries, iron furnaces, glass works, manufactories and machine shops, and was incorporated in 1800. There is a soldiers and sailors' monument and a statue has been erected to Gov. A. G. Curtin. The borough is governed by a chief burgess, elected for three years, and nine councilmen. The State penitentiary is located at four miles distance from Bellefonte. Bellefonte is a summer resort much visited for its scenery and noted for its spring, whose waters have supplied the borough since 1807. Pop. 4,750.

**BELLEGARDE,** bel'gärd', **Henri** (COMTE DE), Austrian general and statesman: b. Dresden, 28 Aug. 1756; d. Vienna, 22 July 1845. After spending some time in the army of Saxony he entered that of Austria and took part in the campaign of 1788 against the Turks. He became major-general in 1792, served against France under Wurmser and was sent on a mission to the Congress of Rastadt. He became chief of staff in Italy in 1800, member of the aulic council and president of the council after the retreat of Archduke Charles in 1805. He commanded the Austrian right at Caldiero and was afterward successively governor-general of Venice and of Galicia. In 1809 he commanded the 1st and 2d Austrian corps and took part in the battles of Essling and Wagram. After this campaign he was made field marshal and was again governor of Galicia. He was again president of the Aulic council of war in 1812 and afterward commanded the Austrian forces in Italy. After the first treaty of Paris he became governor of Austria's Italian provinces and in 1815 he

destroyed the army of Murat. After 1815 he resided several years in Paris. In 1820 for the third time he was president of the council and became also Minister of State. He retired in 1825. Consult Von Smola, 'Das Leben des Feldmarschalls H. von Bellegarde' (Vienna 1847).

**BELLEGARDE, Jean-Baptiste Morvan de,** French ecclesiastic and writer: b. Piriac, Hautes, 30 Aug. 1648; d. Paris, 26 April 1734. He entered the Jesuit order and was a pupil of Bonhours. After 18 years he left the order because of his leanings toward Cartesianism. He became a member of the community of Priests of Saint Francis of Sales. He was a prolific writer, being the author of a great number of works and of translations often inexact. He is best remembered as the translator of the works of eminent ecclesiastics, as 'Lettres de S. Basile le grand' (Paris 1693, 1701); 'Sermons de S. Grégoire de Naziance' (Paris 1698); 'Discours et homélies de S. Jean-Chrysostome'; 'Sermons de S. Léon le grand' (Paris 1701); 'Imitation de Jésus-Christ' (Paris 1698).

**BELLEGARDE,** France, a fortress situated on an isolated summit, 1,380 feet above sea-level, in the department of Pyrénées-Orientales, and commanding the highway from Figueras to Perpignan. It has been the scene of several armed conflicts. Peter III of Aragon defeated Philip III of France here in 1285. In 1674 it was taken by the Spaniards and again by the French under Schomberg in 1675. Louis XIV erected the height into a regular fortress with bastions in 1678–79. The Spaniards blockaded and captured it in 1793, but it was retaken by the French in the following year.

**BELLEISLE,** bĕl-ēl, **Charles Louis Auguste Fouquet** (COMTE DE), marshal of France: b. Villefranche, 22 Sept. 1684; d. Versailles, 26 Jan. 1761. He distinguished himself during the famous siege of Lille. After the conclusion of the war of the Spanish Succession the cession of Lorraine to France at the Peace of Rastadt was principally his work (1735); Louis XV made him governor of Metz and the three bishoprics of Lorrainie. After a diplomatic mission to the courts of Germany in 1741 he was placed at the head of the French forces sent to oppose those of Maria Theresa. He took Prague by assault; but the King of Prussia having made a separate peace, he was compelled to a retreat, which he performed with admirable skill. In December 1744, when on a diplomatic journey to Berlin, he was arrested in Germany and sent to England, but he was exchanged in 1746. In the following year he forced General Browne, who had entered the south of France from Italy, to raise the siege of Antibes and to retreat over the Var. In 1748 the King made him a peer of France, and the Department of War was committed to his charge. He reformed the army by abolishing many abuses, enlarged the military academy, and caused an order of merit to be established.

**BELLENDEN, William,** Scottish author: b. Lasswade, Midlothian, about 1555; d. about 1633. He was educated at Paris, where he was professor of *belles-lettres* in 1602; and though he was made master of requests by James I he still continued to reside in the French metropolis. He was distinguished for the elegance of his Latin style, and in 1608 he published a work entitled 'Ciceronis Princeps,' containing a selection from the works of Cicero, consisting of passages relating to the duties of a prince, etc. He afterward published 'Ciceronis Consul, Senator,' etc. (1612), with two other treatises, from one of which Conyers Middleton's 'Life of Cicero' was largely compiled — a plagiarism first denounced by Wharton and clearly proved by Dr. Parr in a Latin preface prefixed to a reissue of Bellenden's writings (1787). His 'De Tribus Luminibus Romanorum,' published, posthumously, was designed to illustrate the history of Rome from the writings of Cicero, Seneca and Pliny; but it is incomplete, and only contains matter drawn from the first named author.

**BELLERMANN, Ferdinand,** German painter: b. Erfurt, 14 March 1814; d. Berlin, 11 Aug. 1889. He was educated at the academy at Weimar, and studied later at Berlin under Karl Blechen and Wilhelm Schrimer. He traveled in Norway, the Netherlands, Venezuela and Italy, and in 1866 became professor of landscape painting at the Berlin Academy. He utilized the results of his travels in the production of many magnificent landscapes, among which may be mentioned 'Evening in the Valley of Caracas'; the 'Guacharo Cave, Venezuela'; 'Sierra Nevada,' etc.

**BELLEROPHON,** bĕl-lĕ'rō-fŏn, son of Glaucus, king of Ephyre, by Eurymede, at first called Hipponous. The murder of his brother, whom some call Alcimenus and Bellerus, procured him the name of Bellerophon, or murderer of Bellerus. After this murder Bellerophon fled to the court of Prœtus, king of Argos, whose wife became enamored of him; and because he slighted her passion she sought to destroy him. He escaped her machinations, was introduced to the court of Jobates, king of Lycia, and, after a number of adventures, in one of which he conquered the Chimæra, he married the daughter of Jobates and succeeded to the throne of Lycia. According to the fabled accounts, on Bellerophon attempting to soar to heaven on the back of Pegasus, Zeus sent a hornet which so stung his winged steed that he cast his rider to the earth, where lame and blind he wandered lonely in the Aleïan fields, a prey to corroding grief and melancholy, shunning men, and hated by the gods. At Corinth and in Lycia Bellerophon was worshipped as a sun-god. His adventures were a favorite subject in ancient art.

**BELLEROPHON,** a genus of gasteropodous mollusks, typical of the family *Bellerophontidæ*. The species are all fossil shells found in the limestones of the Silurian, Devonian and Carboniferous periods. The best-known American species are found in the coal measures of the Mississippi Valley and the Southwest. The so-called *B. cilobatus*, a fossil characteristic of the Trenton formation, is now assigned to the genus *Protowarthia*.

**BELLES-LETTRES,** bĕl-lĕtr, the French term, for which the English equivalent is polite literature. It is impossible to give a satisfactory explanation of what is or has been called *belles-lettres;* in fact, the vaguest definition would be the best, as almost every branch of

knowledge has at one time been included in, at another excluded from, this denomination. The most correct definition, therefore, would be, perhaps, such as embraced all knowledge and every science not merely abstract or simply useful. In the division of the departments at the Lyceum of Arts, established at Paris in 1792, the *belles-lettres* comprehended general grammar, languages, rhetoric, geography, history, antiquities and numismatics; while philosophy, mathematics, etc., were called, in contradistinction, sciences.

**BELLEVAL,** bĕl-väl, **Pierre Richer de,** French botanist: b. Chalons-sur-Marne c. 1564; d. 1623. He was the first person in France who taught botany as a science distinct from medicine. Henry IV established a botanical garden at Montpellier, and created a chair of botany. Belleval obtained the first appointment in 1593, and immediately began a collection of all the plants in Languedoc, in order to the production of an illustrated flora, for which about 500 quarto plates had been engraved, when he died. Through the carelessness of his representatives, almost all of these were lost.

**BELLEVILLE,** Canada, town, port of entry and county-seat of Hastings County, Ontario, on the Bay of Quinte, at the mouth of the Moira River. It is on the Grand Trunk Railway 60 miles west of Kingston. It has an excellent harbor, and the Moira affords abundant water-power for manufacturing. Belleville is in the heart of the finest dairying region of Canada; is in direct steamboat communication with many Canadian and United States points, and enjoys an extensive trade, especially in lumber. It is the seat of Albert College, and has other excellent educational institutions, a deaf and dumb institute and public library. The chief manufactories are lumber, pottery, cigars, sash and blinds, woolens, shirts, mining tools, machinery, lanterns and tinware. A short distance east of Belleville are large cement works for the utilization of a limestone which exists in great abundance in the vicinity. The city has agencies for the principal banks of Canada, daily and weekly newspapers, and is the seat of a United States consulate. Pop. 9,876.

**BELLEVILLE,** Ill., city and county-seat of Saint Clair County, situated on several railroads, 14 miles east of Saint Louis, Mo. It is in the midst of very productive coal mines; has a large trade in flour, and general produce; and is chiefly engaged in the manufacture of glass, stoves, flour, nails and machinery; there are also a distillery, breweries, shoe factories, ice plant, etc.; it has one of the largest rolling mills in the west. The city has trolley lines to Saint Louis, a public library, Saint Peter's Cathedral (Roman Catholic), convent, four national banks and an assessed property valuation of over $2,250,000. Settled in 1814, it was incorporated in 1846. The government is vested in a mayor, elected biennially, who appoints all the important administrative officers. Pop. 25,000.

**BELLEVILLE,** Kan., town, county-seat of Republic County, 219 miles northwest of Kansas City on the Union Pacific, the Chicago, Rock Island and the Pacific railroads. It is in the centre of a stock raising and grain producing country and has many grain elevators, flour mills and alfalfa mills. Pop. 2,224.

**BELLEVUE,** Iowa, city of Jackson County, 20 miles east of Maquoketa, the county-seat, on the Chicago, Milwaukee and Saint Paul Railroad. The city's industries include button-making, piano factories, flower pots and hollow block works and gasoline marine engines. It has three banks with combined resources amounting to $1,012,000, public, parochial and Lutheran schools. The electric-lighting plant and the waterworks are the property of the municipality. In 1917 the city's receipts from all sources totaled $22,464.67 and the expenditures $19,259.17. Clay suitable for many clay products is abundant in the neighborhood. The government is vested in a mayor and an aldermanic board of five members. Pop. 1,776.

**BELLEVUE,** Ky., city in Campbell County, on the Ohio River, opposite Cincinnati, of which it is practically a suburb. It is almost exclusively a city of residences, but has a few industries of which sand and gravel quarrying are the principal. Bellevue was first settled in 1866 and received its city charter in 1871. The government is vested in a mayor, elected for four years, and a council of eight members chosen every two years. Pop. 6,683.

**BELLEVUE,** Ohio, city in Sandusky County, on the Lake Shore and Michigan Southern, the New York, Chicago and Saint Louis, the Lake Shore Electric and other railroads, about 16 miles south of Sandusky. It contains a Carnegie library and a hospital and has railroad repair shops, canning factories, lumber yards, manufactories of agricultural and drainage machinery, fixtures and stoves. It is the trade centre for a thriving agricultural region. The most unique feature of the city is its sewerage system. An underground stream flows beneath the city into Lake Erie and on each block a hole is drilled to this stream which thus serves to dispose of all sewage and surface water as well. Pop. 5,209.

**BELLEVUE,** bĕl-vü (French, "fine prospect"), a beautiful country palace in the neighborhood of Paris, situated on a ridge of hills stretching from Saint Cloud toward Meudon. It was built by Mme. de Pompadour, between 1748 and 1750. The first French artists of the time had exerted all their talents in embellishing it; so that at the period when it was built, it was considered the most charming in all Europe. After the Revolution it was sold and the purchaser had it demolished. There is a pretty village on its site, which, during the siege of Paris (1870–71), was an important strategic point.

**BELLEW (Harold), Kyrle,** English actor, the son of the Rev. J. M. Bellew, Calcutta, a well-known elocutionist: b. 1857; d. Salt Lake City, 1 Nov. 1911. After serving for some years in the British navy, he went to Australia, where he was successively engaged as gold prospector, actor, newspaper man and lecturer. Returning to England, he made his first appearance as an actor in that country at Brighton in 1875, and joined Henry Irving's Company in 1878. He made his début in New York in 1885 as Hubert in the play 'In His

Power.' He was associated with Mrs. James Brown Potter from 1888–98, and accompanied her (1888–91) on a world tour in which Australia and India were included. He returned to Australia in 1899, and there engaged in mining ventures. His later years were spent in the United States, where he achieved notable success in the parts of 'Raffles' and 'Brigadier Gerard.'

**BELLEY**, bĕl-lā, France (ancient BELLICA), a town in the department Ain, 39 miles southeast of Bourg, and 38 miles southwest of Geneva; situated in a fertile valley watered by the Furan. It is very ancient, having been a place of note in the time of Julius Cæsar, and is the seat of a bishopric founded in 412. It contains a communal college, has an agricultural society and a court of primary resort. The episcopal palace, the belfry of the cathedral, the college and the rich cabinet of medals and antiquities, are worth notice. Silk worms are reared; and lithographic stones, reckoned the best in France, are obtained from quarries in the neighborhood, and it has silk and cotton industries. Pop. 6,182.

**BELLI**, bĕl'lē, **Giuseppe Gioachino**, Roman humorist and satirical poet: b. 1791; d. 1863. He wrote in the popular dialect of the Trastevere; and in early life scourged the papacy and the clergy with stinging, irreverent and often vulgar satire. Becoming afterward a zealous convert to the Roman faith, he endeavored to call in and destroy the indiscretions of his youth. In his last years he published a beautiful translation of the Roman Breviary. His published sonnets amount to more than 2,000; his other published Italian verses fill four considerable volumes; while two-thirds of his literary remains have never been gathered and edited. Of this last, much is clothed in language too coarse to bear the light of modern culture.

**BELLIARD**, bĕl-yär, **Augustin Daniel**, (COMTE DE), French soldier and diplomatist: b. Fontenay-le-Comte, La Vendée, 1769; d. 27 Jan. 1832. Under Napoleon he served in Egypt, Germany, Spain and Russia and rose to great military distinction, and was wounded at the battle of Leipzig. He supported the Emperor on his return from Elba, and on the restoration of the monarchy was made a peer and became, in 1832, ambassador to Belgium. His autobiography was published in 1842.

**BELLIGERENCY.** In international law, a state of armed hostility which has been legally recognized. This condition may exist between nations, between a nation and a community not within the family of nations, or between an established and recognized nation and one of its sections which may be attempting to throw off the jurisdiction of the parent state with the object of becoming independent or attaining some other political end. It is not necessary that a community be independent in order to have the status of a belligerent, but it is necessary that such community conduct hostilities according to customs pursued by regularly established states or otherwise be under a de facto government. When the fact of belligerency between two nations is established, their legal relations are changed at once, the laws of peace being superseded by the laws of war, while neutrality laws govern the conduct of states not participating in the conflict. See NEUTRALITY.

When a revolted party of great numerical strength forms a regular government and rules over the whole or part of the territory claimed, humanity dictates that the members of such party should not be treated as rebels guilty of treason but, if captured, should be regarded as prisoners of war. Hence those who have risen in arms against the parent government exert every effort to obtain for themselves the status of belligerency, since the recognition of the belligerency of a party, not a state, bestows all the rights of war of an established state. The usual manner of notifying neutrals of the existence of a state of war is by public proclamation and the most common method employed by outside states to recognize belligerency is the issuance of a proclamation of neutrality which states the attitude of the maker thereof toward the belligerents. (See DECLARATION OF WAR). Under the rules of modern warfare, belligerents must respect the lives and property of non-combatants, must refrain from inflicting any more damage than is absolutely necessary to accomplish victory, and must not employ cruel methods of warfare or use barbarous weapons. Upon occupying conquered territory the dominant belligerent may require the submission of the inhabitants; in the European War Germany imposed numerous fines not only on private citizens but also on established communities for real or alleged disobedience of commands or for hostility displayed by the inhabitants. (See CONQUEST, RIGHT OF). Under international law, neutrals and their goods, ships, commerce, etc., are supposed to be exempt from the dangers and injuries wrought by the war, provided they adhere strictly to a policy of neutrality as regards the belligerents. See NEUTRALITY.

When one community is in rebellion against the parent state (as in the Revolutionary War) or a revolutionary party or section wages war against the general government (as in the Civil War) a more difficult question arises. If a nation or state recognize the belligerency of a community outside the family of nations, that community, so far as the rights of war are concerned, has an international status as regards the nation or state which recognizes it. If foreign nations recognize the belligerency of a community within the territorial area of an established state, then such community has international standing, but, if not, its acts of war are technically acts of piracy, it has no belligerent rights, nor can foreign states be compelled to recognize its blockades or receive its vessels in their ports. (See BLOCKADE) If the parent government recognize the belligerency of the revolted community, then a state of belligerency exists for all nations, but if the government refuse to recognize the revolutionary section and another nation do so, then for the latter a state of belligerency exists and other nations must take cognizance of the existence of such a status between the recognized and the recognizing parties. It is not necessary that the parent government recognize a revolting community by a formal declaration, but the existence of war may be made known by

an act of less formal character (such as a blockade proclamation or a call for volunteers to suppress rebellion) as was the case in the Civil War. The conferring of belligerent rights on a revolting community by a neutral state does not carry with it the recognition by that state of the independence of the insurgent government; such recognition would imply that the parent government cannot subdue the rebellion and hence, being premature, might be regarded by the parent government as a cause for war against the state making such recognition. No insurgent may claim as a right the recognition of a status of belligerency; it is merely a question of expediency which the neutral state must decide for itself; such recognition may be granted for any reason or reasons deemed sufficient by the grantor, whether they be wholly selfish or humanitarian or dictated by a fixed international policy. But there are two conditions that a neutral must find existent before granting belligerent rights, viz., a civil government in the rebellious community exercising *de facto* authority in a definite territory and a state of hostilities between such de facto government and the parent government. These military operations need not be of great extent, but if the rebellion should have assumed enormous proportions and be of such a formidable character as to affect outside interests, neutral states may consider that the demand for a recognition of belligerency has become conclusive.

Some have contended that the British proclamation of neutrality of 13 May 1861 was a premature recognition of the Confederate States and that by selling munitions of war and other merchandise to the South and buying her cotton Great Britain was aiding rebellious citizens against the parent government, and, in fact, filibustering. They have compared the protest of the United States against the recognition of Confederate belligerency and the shipment of arms to her by Great Britain with Germany's protest against shipments of munitions to the Allies from the United States in the war of 1914. The fact often overlooked, in the case of the Civil War, is that England, France, The Netherlands and other nations, by their proclamations of neutrality, recognized the *belligerency* of the Confederacy; this did not mean that these powers recognized the Confederate States as an independent, sovereign government but merely that these foreign states considered the conditions to warrant the conferring of belligerent rights so that both sections would be treated alike and impartially. In his dispatch of 6 May 1861 to Lord Crowley, *Lord* John Russell states "that Her Majesty's Government cannot hesitate to admit that such confederacy is entitled to be considered as a *belligerent*, and, as such, invested with all the rights and prerogatives of a belligerent." ('The Case of the United States before the Tribunal of Arbitration at Geneva,' Senate Ex. Doc. 31, 42d Congress, 2d session, pp. 24–27). If a civil war affect the relations of the community with foreign countries, if such countries find a new government de facto applying belligerent rights on the seas, if the rules of blockade, contraband and search hamper their commerce, and if they be called upon to decide whether ships carrying a new flag may enter their ports, then such countries are warranted by international law and a due regard for the commercial interests of their subjects in recognizing the belligerency of the insurgent and declaring their town neutrality. Hence, England's course in acknowledging the belligerent rights of the Confederacy was justifiable. (Dana, R. H., ed., Wheaton's 'Elements of International Law,' § 23, Boston 1866; Woolsey, T. D., 'International Law,' § 180, New York 1875). The British believed their commerce needed protection on the high seas and that by issuing a proclamation of neutrality they would not only bring the management of the conflict within the rules of civilized warfare but would prevent inroads on their commerce by pirates, since, in the eyes of the world, the neutrality proclamations placed all vessels that accepted letters of marque from the Confederacy on the level of privateers instead of considering them pirates and their crews amenable for piracy, as Lincoln's proclamation of 19 April had declared them to be. (See PRIVATEERS; PIRACY). On 15 May 1861 the London *Times* said:

"Being no longer able to deny the existence of a dreadful civil war, we are compelled to take official notice of it. . . . Our foreign relations are too extensive, the stake we hold in the commerce of the world is too vast, and, we may add, our attitude is a matter of too much importance for us to allow ourselves the gratification of saying 'Peace, when there is no peace,' so largely indulged in up to the very latest moment by the statesmen of America herself. Yes, there is war. . . . Eteocles and Polynices are confronting each other with hostile weapons, and England, like the venerable queen of Thebes, stands by to behold the unnatural combat of her children. From acknowledging the state of war, the next step is to acknowledging the belligerent rights of the contending parties. . . . As belligerents they are as equal in our eyes as Trojan or Tyrian was in the eyes of Queen Dido. We are bound equally to respect their blockades and equally to abstain from any act which may violate the conditions of the most impartial and undiscriminating neutrality." (Consult also Earl Russell's letter to Adams, 30 Aug., 1865; Bernard, Montague, 'An Historical Account of the Neutrality of Great Britain during the American Civil War,' p. 162 *et seq.*, London 1870).

The conferring of belligerent rights gave the Confederacy the powerful moral support which insurgent movements gain from international recognition, and among these rights were respect for the lives and property of noncombatants, the regarding of captives as prisoners of war, the privilege of negotiating foreign loans, the recognition of its flag, and the right to purchase arms and ammunition in the open market. Hence foreign countries could sell munitions of war to both sides without fear of violating neutrality, and the Northern government had no more justification than Germany in protesting. But when these nations conferred belligerent rights upon the Confederacy they could not hold the Northern government liable for injuries inflicted on their subjects by the Confederates in the territory occupied by the latter, whereas Turkey, not having issued a proclamation of neutrality, was able to claim indemnity for losses sustained at the hands of rebellious subjects of the United States. Some state that the European nations were unduly hasty in placing the Confederate States on an equality with the Union as to belligerent rights, as is witnessed by the speeches of John Bright and other prominent men, since such action seemed to presage the recognition of their independence at an opportune moment. (Consult Curtis, G. W., ed., 'Correspondence of J. L. Motley,' Vol. I, p. 380; Rogers' ed. of 'John Bright's

Speeches,' Vol. I, p. 132; Woolsey, T. D., in *The New Englander*, July 1869, p. 579). Seward wrote to Adams:

"The proclamation of neutrality was a concession of belligerent rights to the insurgents and was deemed by this government as unnecessary and in effect as unfriendly. . . . The United States stand upon what they think impregnable ground when they refuse to be derogated, by an act of the British government, from their position as a sovereign nation in amity with Great Britain and placed upon a footing of equality with domestic insurgents who have risen up in resistance against their authority." ('Diplomatic Correspondence,' 1863, Pt. I, p. 393).

John Jay said also: "The Proclamation . . . in a moral view lowered the American Government to the level of the rebel Confederacy, and in the next place, it proceeded, in an international view, to place the rebel Confederacy on a par with the American Government." ('The Great Conspiracy: Address at Mount Kisco,' 4 July 1861). Seward claimed that war did not exist in an international sense and that foreign powers should not take cognizance of the insurgents in territory over which the United States had not relinquished its sovereignty. He claimed for the North the rights of a belligerent to blockade and search which implied a legal war but denied the existence of a war, in which case there could not be a body of neutrals. But Seward's opinion was not binding on European nations then any more than Germany's wishes in 1914 could be construed into law for the United States to follow. Moreover, at its December term of 1862, the Supreme Court decided that Lincoln's blockade proclamation of 19 April 1861 (Consult Richardson, J. D., 'Messages and Papers of the Presidents,' Vol. VI, p. 14) was in itself "official and conclusive evidence to the court that a state of war existed." (Consult also Snow, Freeman, 'Cases and Opinions on International Law,' pp. xvi, 254, Boston 1893). Judge Chase also stated from the bench that "the rights and obligations of a belligerent were conceded to it [the Confederacy] in its military character very soon after the war began from motives of humanity and expediency by the United States." (Wallace, 'Supreme Court Reports,' 1868, p. 10). Hence, when Adams complained to Lord Russell of the dispatch of "numbers of steam vessels laden with arms, and munitions of war of every description, together with other supplies, well adapted to procrastinate the struggle with a purpose of breaking a blockade legitimately established and fully recognized by her majesty" ('Diplomatic Correspondence,' 1863, Pt. 1, p. 314), Lord Russell was fully justified in replying as follows:

"With regard to the general duties of a neutral, according to international law, the true doctrine has been laid down repeatedly by presidents and judges of eminence of the United States, and that doctrine is that a neutral may sell to either or both of two belligerent parties, any implements or munitions of war which such belligerent may wish to purchase from the subjects of the neutral. . . . Admitting also, that which is believed to be a fact, that the Confederates have derived a limited supply of arms and ammunition from the United Kingdom, notwithstanding the Federal blockade of their ports; yet, on the other hand, it is perfectly notorious that the Federal government have purchased in and obtained from the United Kingdom a far greater quantity of arms and warlike stores." ('Diplomatic Correspondence', 1863, Pt. 1, p. 373).

John Bright wrote to Sumner as follows:

"The people . . . know that great quantities of arms have been sold to the North and argue that it must be equally lawful to sell arms or ships to the South. And Mr. Seward and Mr. Adams have lent some support to this view in complaining of the sale of arms to the Confederacy as if it were an offense in magnitude equal to that of furnishing ships of war. Since the South were admittted as belligerents, in respect to the sale of arms, you have been treated as two nations equal in the sight of our government and one as much in their favor as the other."

Of course, the equipping in England of privateers for the Confederacy was a breach of neutrality for which England paid a considerable sum of money under the decision of the Geneva Tribunal and Lord Russell admitted in a speech of 26 Sept. 1863 that such acts or similar ones would constitute such breach:

"If you are asked to sell muskets, you may sell muskets to one party or the other, and so with gunpowder, shells or cannon; and you may sell a ship in such a manner. But if you will on the other hand, train and drill a regiment with arms in their hands to take part with one of the two belligerents, you violate your neutrality and commit an offense against the other belligerent. So in the same way in regard to ships, if you will allow a ship to be armed and go at once to make an attack on a foreign belligerent, you are yourself, according to your law, taking part in the war, and it is an offense, which is punished by the law." (Speech in reference to the Foreign Enlistment Act quoted in London *Times* 28 September).

See CONFEDERATE STATES; UNITED STATES, DIPLOMACY OF THE; NEUTRALITY; BLOCKADE; DECLARATION OF WAR; CONQUEST, RIGHT OF; INTERNATIONAL LAW; WAR; INSURRECTION; PRIVATEERS; PIRACY; REBELLION; TREASON.

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**BELLIGERENT**, a nation or a large section of a nation engaged in carrying on war. On the outbreak of war between sovereign powers the rights and duties of the warring nations in regard to each other and in regard to neutral powers are clearly defined by international law. The first general stipulation is that neutral powers be formally notified of the existence of a state of war. In regard to the rights and duties of belligerents one to another, international law and custom in modern times demand that non-combatants be protected in their persons and property, and that barbarous weapons or methods be avoided. When hostile territory is occupied, the invading army may require the submission of the inhabitants and may exercise in such territory all the powers previously exercised by the ousted government. The trade of neutrals is to be relieved as far as possible of all inconven-

iences. An insurgent state cannot claim the recognition of belligerency from a neutral state as a matter of right and for the latter such recognition is merely a matter of expediency. In the contest between the Federals and Confederates in 1861–65 the latter section of the American people, at the very commencement of the struggle, claimed the privileges of belligerents. Their demand was promptly acceded to by the British and French governments, at which the Federal authorities took umbrage, contending that the recognition had been premature, while the British maintained that it could not have been refused or delayed. The grant of belligerent rights to insurgents imposes certain obligations on the latter, such as the observance of the rules of international law both in regard to their opponents and to neutrals. Such a grant also shifts the responsibility for damages to neutrals from the sovereign state to the insurgent party. Its advantages to the latter lie in the moral support gained from recognition by neutrals, giving it the right to negotiate loans and placing its commanders and their troops under the protection of the laws of war. See BELLIGERENCY; BLOCKADE; INTERNATIONAL LAW; NEUTRALITY; and consult Snow, 'Manual of International Law' (2d ed., Washington 1898), and Wheaton, 'Elements of International Law' (8th ed., Boston 1866).

**BELLINCIONI**, bĕl-lēn-chō'nē, **Gemma**, Italian singer: b. Como, 18 Aug. 1866. Showing herself possessed of a remarkable voice at an early age, her father began cultivating it. Later she became a pupil of Corsi. She made her first appearance in Pedrotti's 'Tutti in Maschera' at Naples, in 1881, when she was only 15 years of age. Among the audience was the famous tenor, Tamberlik, who was so keenly impressed by her voice that he forthwith engaged her as his prima donna for an extended tour of Spain and Portugal. She soon became recognized as one of the best, if not the best, singer of her time. In 1890 Mascagni created for her the part of Santuzza in 'Cavalleria Rusticana,' and it is generally admitted that she contributed not a little to the immediate success of that famous opera.

**BELLING, Wilhelm Sebastian von**, German cavalry officer and one of the generals of Frederick the Great: b. Paulsdorf, Prussia, 15 Feb. 1719; d. Stolp, 28 Nov. 1779. He entered the Prussian army in 1737 and rose rapidly in rank, being an officer in the Black Hussars. He especially distinguished himself in the campaign against the Swedes in Pomerania and Mecklenburg during the period from 1759 to 1761. In 1762 he was made a major-general and four years later a lieutenant-general. It was during the operations against the Swedes that he took prisoner the famous Blücher, then a young subaltern, and persuaded him to enter the Prussian service.

**BELLINGHAM, Richard**, royal governor of Massachusetts: b. about 1592; d. 7 Dec. 1672. He emigrated to the colony, of which he was one of the original patentees, in 1634; in 1635 was made deputy-governor; and in 1641 was elected governor in opposition to Winthrop by a majority of six votes. He was re-elected in 1654 and after the death of Endicott was chosen again in May 1665, and continued in the executive chair of the colony as long as he lived, having been deputy-governor 13 and governor 10 years. He was appointed assistant major-general in 1664, in which year the King sent commissioners to inquire into the state of the colony, when, according to Hutchinson, Bellingham and others obnoxious to James II were required to go to England to account for their conduct. The General Court, however, refused obedience and maintained the authority of the charter. His wife having died, in 1641 he married a second time, of which a contemporary speaks thus: «A young gentleman was about to be contracted to a friend of his, when on a sudden the governor treated with her, and obtained her for himself.» The banns were not properly published, and he performed the marriage ceremony himself. He was prosecuted for a violation of the law, but at the trial he refused to leave the bench, sat and tried himself, and thus escaped all punishment. In his last will he provided that after the decease of his wife and of his son by a former wife, and his granddaughter, the bulk of his estate should be spent for the yearly maintenance «of godly ministers and preachers» of the true Church, which he considered to be that of the Congregationalists. This will the General Court set aside on the ground that it interfered with the rights of his family. He was a clean and just administrator, but intolerant in his attitude to the Quakers. A sister of his, Anne Hibbens, was executed at Salem in June 1656, during the witchcraft persecution.

**BELLINGHAM**, Wash., city and county-seat of Whatcom County, on the eastern shore of Bellingham Bay, and on the Great Northern, Northern Pacific, Canadian Pacific and Bellingham Bay and British Columbia railroads, 97 miles north of Seattle. The first settlement was made in October 1852 by Capt. Henry Roeder, who built a saw-mill on what is now Whatcom Creek. The Lummi tribe of Indians maintained their chief camp on the beach near the mouth and falls of Whatcom Creek, and called the camp or rather the locality «*Whrap cop*,» meaning «the noisy water» or «the place of the noisy water.» The white men retained the Indian name for their town, modified as indicated by the spelling to Whatcom. This remained the name of the town until the consolidation of Whatcom and New Whatcom in 1891 under the name of New Whatcom, from which the prefix «New» was dropped by action of the State legislature 19 Feb. 1901. Fairhaven is the English interpretation of an Indian word or phrase, «*See-see-leechel*,» meaning «a safe harbor» or «the sheltered beach;» this town was plotted and named in 1883 by Daniel J. Harris, the original donation claimant. In 1890 Fairhaven and the adjoining town of Bellingham were incorporated as one city under the name of Fairhaven. On 27 Oct. 1903, the electors of Fairhaven and Whatcom voted to consolidate the two cities under the name of Bellingham and the consolidation was duly consummated. The new name went into effect 28 Dec. 1903, and the post-office became Bellingham 1 April 1904. Bellingham Bay was named by Vancouver in 1792, and the consolidated city takes its name from that bay. The city is the commercial centre of a large lumber and agri-

cultural region; salmon fishing is also an industry of great importance. Largest salmon cannery in the world, and mining and quarrying are carried on in the vicinity. The principal manufacturing establishments include lumber and shingle mills, salmon canneries, wood working and iron working plants and brick kilns. Salmon canning and brewing, milk condensing and the manufacture of cement and cans are also important industries. The United States census of manufactures for 1914 reported 86 industrial establishments of factory grade, employing 2,182 persons, of whom 1,922 are wage earners who receive $1,318,000 annually in wages. The capital invested totaled $6,912,000, and the value of the year's output was $6,264,000: of this, $2,898,000 was the value added by manufacture. There are four banks with a combined capital of $600,000. There are 49 established churches in Bellingham representing practically all denominations. There are 11 city schools, two libraries, the Bellingham Bay Library and the Carnegie Library. The city also contains the State Normal School, and three business colleges, a parochial and two high schools. The government is vested in a mayor, elected biennially, and a council of seven members, elected alternately every two years. Pop. (1910) 24,298; (1916) 36,890.

**BELLINGSHAUSEN, Fabian Gottlieb von,** Russian naval officer and Antarctic explorer: b. island of Osel, 9 Sept. 1778; d. Kronstadt, 13 Jan. 1852. Graduating from the Naval Academy at Kronstadt, he became an officer in the Russian navy. In 1809 he distinguished himself in his operations as captain of a corvette against the Swedish fleet. In 1819 he was assigned by the Emperor Alexander to the command of two ships for the purpose of conducting an exploring expedition into the south Polar regions. He succeeded in penetrating the Antarctic Circle to lat. 70° S., discovering and naming Alexander Land, Peter Island and Traversay Island. The expedition returned to Kronstadt, arriving 5 Aug. 1821. Seven years later Bellingshausen so distinguished himself in the naval operations against the Black Sea port of the Turks, Varna, that he was made a vice-admiral and was given command of the Russian Baltic fleet. Later he became military governor of Kronstadt. A narrative of his Polar explorations was published in Saint Petersburg in 1831.

**BELLINI,** bel-lē'nē, **Gentile,** elder son of Jacopo (q.v.): b. 1429; d. 1507. He became more distinguished than his father, but did not rival his younger brother, Giovanni. In 1469, in reward for his work, he was made a count palatine of the empire and in 1474 official painter to the Venetian state. In conjunction with his brother Giovanni, he painted a series of frescoes for the ducal palace at Venice, depicting the conflict between the Papacy and Barbarossa, but these were destroyed by fire in 1577. His fame attracted the notice of Mohammed II, conqueror of Constantinople, and Bellini visited the grand seignor in 1480, being sent by the Senate. He painted a number of pictures for Mohammed, and also struck a medal for him, with all of which he was greatly pleased, and rewarded the painter by presenting him with a gold chain and 3,000 ducats. There is a very fine pen-and-ink drawing by Bellini in the British Museum, representing Mohammed and the Sultana mother, in whole-length figures in a sitting position. 'The Adoration of the Magi' is in the Layard collection, Venice; and 'Saint Mark Preaching in Alexandria,' is in the Brera at Milan. A small painting in watercolor of a scribe, discovered in 1905 in a bazaar in Constantinople, is in the possession of Mrs. Gardner, Boston.

**BELLINI, Giovanni,** Venetian painter: b. about 1430; d. 1516. He was the younger son of Jacopo Bellini, an original artist of great vigor and attainments, who went to various cities of northern and central Italy and came in contact with the Renaissance influences, new in his time, which were to vivify the declining mediæval art of Italy. It was particularly in Padua where Squarcione had his famous collection of classical antiquities, that the new attitude toward art was taking shape, and the closeness of relation between the Bellini and Squarcione groups may be judged from the fact that Jacopo Bellini gave his daughter in marriage to Mantegna, the adopted son of Squarcione. Giovanni Bellini and his older and only less gifted brother Gentile carried on their father's work, and the two sons lived to see their art triumph over that of the previous school of the Vivarini of Murano. This is the true point of departure of the Venetian school. Beginning with works in which the Squarcionesque ideas joined to his father's teaching forms the dominating influence (this period is well represented at the Correr Museum in Venice by the 'Pietà,' the 'Transfiguration' and the 'Crucifixion'), we find Giovanni Bellini in 1459 painting the 'Agony in the Garden,' the masterpiece of his early manner. From this time on he is more independent and of the character we associate with Venetian art. The great 'Coronation of the Virgin' at San Francesco, Pesaro, shows Bellini in almost full possession of his personal style as does the 'Madonna' of the National Gallery, London. The change was accentuated in decade 1470–80, when Bellini learned from Antonello da Messina the process of oil-painting, his work up to this time having been done in tempera. The discovery was one peculiarly suited to the nature of Bellini and his people. For while fresco and tempera with their tendency toward severity were well adapted to the draughtsmen of Florence, the warmth and modulation of oil-color were of the greatest value to the sumptuous art of Venice. It was probably as much Giovanni Bellini's national character as his great mastery that brought to him his great pupils Giorgione and Titian, beside many others who attained fame. The Venetian spirit and sense of beauty are evidenced in the celebrated 'Conversazione' or 'Allegory' in the Uffizi, or the 'Virgin with Four Saints' at San Zaccaria, Venice. Landscape and atmosphere are brought, in the Uffizi picture, to one of the highest points they had yet attained, and indeed we may almost say, that they were too attain subsequently. Another fine example of the qualities is afforded by the 'Transfiguration' in the Naples Museum. To the artist's middle period belong such important works as the altar-pieces of San Giobbe and of San

Francesco della Vigna, Venice, that of Santa Corona at Vicenza (the 'Baptism of Christ'), the 'Madonna and Child' of the Brera, Milan, the famous picture of the 'Madonna with the Doge Barberino' at Murano and the 'Madonna with Saints' at the Venice Academy. From 1488 to 1505 Bellini was constantly engaged on decorations in the ducal palace, which were later destroyed by fire. Chosen state painter, he executed (about 1500–05) the portrait of the Doge Loredano which is now in the National Gallery, London. Two pictures in American collections may be safely attributed to him, one being in the Metropolitan Museum of New York. The last picture by Bellini to which we can assign a date with certainty is the altar-piece of the church of San Giovanni Chrysostomo, Venice (1513). It shows the venerable painter still in command of his powers, and if he had at this time left innovation to his pupils, he was yet able to intensify the qualities he possessed. Beside his service to landscape art, which we have noted, Bellini gave the first great example of the color for which Venice was to have its unsurpassed renown. His religious feeling is serene and pure, a certain sweetness and an almost pathetic sincerity making him one of the best-loved of painters. Consult Fry, Roger E., 'Giovanni Bellini' (London 1899); Berenson, 'Venetian Painters of the Renaissance' (New York 1897); Venturi, 'Le origini della pittura veneziana' (Venice 1907), and Meynell, 'Giovanni Bellini' (New York 1906).

**BELLINI, Jacopo,** Italian painter: b. Venice about 1400; d. 1470. He was a pupil of Gentile da Fabriano, and is said to have been taught oil-painting, which was then a secret, by Andrea dal Castagno, and in turn taught it to his sons Gentile and Giovanni (qq.v.) He accomplished much in bringing the art of painting to maturity in his native city. The first works by which he acquired fame were portraits of Catharine Cornaro, the beautiful Queen of Cyprus, and one of her brothers: a picture representing the passion of Christ, in which many figures were introduced, himself among the number; and a historical picture representing a Venetian legend of the miracle of the cross. This cross, containing a piece of the true one on which the Saviour died, was by some accident thrown into the Grand Canal at Venice, and although many persons plunged in after it, it was the will of God that only the guardian of the brotherhood to whom the cross belonged, Andrea Vindramino, could take it out again. This event was represented in the painting. Almost all of Jacopo's works have perished; only three signed pictures survive — one in the archiepiscopal palace at Verona, one in the Tadini Gallery at Lovere, and one in the academy at Venice, others (unsigned) are in the Uffizi gallery at Florence, the Louvre, and the National Gallery, London. Two sketch books have been preserved, and those of priceless value, the one in the British Museum, London, and the other in the Louvre.

**BELLINI, Lorenzo,** Italian surgeon: b. Florence, 3 Sept. 1643; d. 8 Jan. 1704. In 1663 he became professor of anatomy at Pisa. Later he became physician to the Grand Duke of Tuscany and senior consulting physician to Pope Clement XI. He was the first to observe and comment on the action of the nerves on the muscles. The uriniferous ducts, now known as Bellini's tubes, were named from him. His principal work is 'De Structura et Usu Renum' (1662).

**BELLINI, Vincenzo,** Italian composer: b. Catania, Sicily, 1801; d. near Paris, 1835. He was educated at Naples under Zingarelli, commenced writing operas before he was 20, and composed for the principal musical establishments in Europe. His most celebrated works are 'Norma,' 'I Puritani' and 'La Sonnambula.' He is remarkable chiefly for sweetness of melody, suitableness of harmony, and an adaptation of sound to sense, and stood honorably distinguished from many of his profession by the excellence of his moral character.

**BELLINZONA,** bĕl-ĭn-zō'nä, or **BELLENZ,** bĕl' lĕnts, Switzerland, the capital of the canton of Ticino on the left bank of the Ticino, about five miles from its embouchure in the northern end of Lago Maggiore. The town has a very picturesque situation about 760 feet above sea-level and overlooking the Saint Gothard Pass. It was fortified in the Middle Ages and modern ports have been constructed near the pass to protect the town. Pop. 10,773.

**BELLIS.** See DAISY.

**BELLMAN, Karl Mikael,** Swedish poet: b. Stockholm 1740; d. 1795. He grew up in the quietude of domestic life, and the first proofs he gave of his poetical talents were religious and pious effusions. The dissipated life of young men at Stockholm devoted to pleasure was afterward the subject of his poems. By these his name was spread over all Sweden. Even the attention of Gustavus III was attracted to him, and he received from the King an appointment which enabled him to devote himself almost entirely to poetical pursuits, in an easy independence, until his death. His songs are truly national, and love and liquor their most common themes.

**BELLO,** be'lyo, **Andrés,** Spanish-American diplomatist and author: b. Caracas, Venezuela, 29 Nov. 1781; d. Santiago, Chile, 15 Oct. 1865. He became undersecretary of the government of Venezuela in 1802, and in 1807 the King of Spain appointed him Venezuelan Commissioner of War, then an unprecedented honor. In 1810, with Bolívar and López Méndez, he went to London to solicit aid for the South American insurgents. Until 1829 he served as secretary of the Colombian, Chilean and Venezuelan legations in London, when he returned to Caracas. Soon after he removed to Chile, where, in 1834, he became Secretary of State. In 1842 he was appointed the first rector of Santiago University. In 1864 the United States submitted to his arbitrage a question pending with Ecuador and in the following year he was arbiter in a matter in dispute between Colombia and Peru. He was the author of 'Principles of International Law' (1832); 'Gramática de la lengua castellana, dedicada al uso de los Americanos' (1st ed., 1847; latest edition revised and annotated by R. J. Cuervo, Paris 1874); 'Silvas Americanas,' a poem (1827). The Chilean government published his complete works in 1881–93 ('Obras de Andrés Bello,' 15 vols., Santiago de Chile; reprinted in 'Colección de escritores castellanos,' Madrid). (See

SILVAS AMERICANAS). Consult the biography by Miguel Luis Amunátegui (Santiago de Chile 1882), also A Balbín de Unquera, 'Andrés Bello, su época y sus obras' (Madrid 1910).

**BELLO HORIZONTE,** ōr-ē-zon'ta, the typically modern city of Brazil, capital of the state of Minas Geraes, united by rail with Rio de Janeiro. Its special distinction dates from 1897. Formerly it was a village called Cural del Rey, afterward its name was Minas, and before it was made the capital of the state it had only 3,500 inhabitants. It possesses the advantages of a climate admirably healthful and pleasant, and the surrounding country is attractive, as its name implies. Pop. (1916) 50,000.

**BELLOC,** bĕl-lŏk', **Hilaire,** English litterateur: b. La Celle Saint Cloud, France, 27 July 1870. He is the son of M. Louis Belloc, a French barrister; was educated at Balliol College, Oxford, after serving for a time in the French artillery at Toul, and was Liberal member for Salford, 1906–10. In 1911–13 he lectured on English literature at East London College and in 1911 founded *The Eye-Witness.* He has published 'The Bad Child's Book of Beasts' (1896); 'More Beasts for Worse Children' (1897); 'The Modern Traveler' (1898); 'The Moral Alphabet' (1899); 'Danton,' a much-admired biography (1899); 'Lambkins Remains' (1900); 'Paris' (1900); 'Robespierre' (1901); 'The Path to Rome' (1902); 'The Old Road' (1905); 'The Historic Thames' (1907); 'The Pyrenees' (1908); 'The Party System' (with C. Chesterton, 1911, in which the British political system is strongly assailed); 'The Four Men' (1912); 'The River of London' (1913); 'The Book of Bayeux Tapestry' (1914); 'The Girondin' (1914); 'General Sketch of the European War' (1914). During the European War he took a distinguished place as a military commentator, his articles being quoted extensively all over the world.

**BELLOC, Marie Adelaide.** See LOWNDES, MARIE ADELAIDE.

**BELLOMONT, Earl of.** See BELLAMONT, RICHARD, EARL OF.

**BELLONA,** the goddess of war among the Romans, daughter of Phorcys and Ceto. She was called by the Greeks *Enyo,* and is often confounded with Minerva. She was anciently called *Duellona,* and was the sister of Mars, or, according to some, his daughter or his wife. She prepared his chariot when he was going to war, and drove his steeds through the tumult of the battle with a bloody scourge, her hair dishevelled and a torch in her hand. The Romans paid great adoration to her; but she was held in the highest veneration by the Cappadocians, chiefly at Comana, where she had above 3,000 priests styled Bellonarii. In the Samnite War of 296 B.C., the consul, Appius Claudius, vowed a temple to Bellona, which was erected on the Campus Martius, near the Porta Carmentalis. In it the senators gave audience to foreign ambassadors and to generals returned from war who claimed a triumph, which claims would be void did they enter the city. At the gate was a small column, called the "column of war," against which they threw a spear whenever war was declared. The priests of this goddess consecrated themselves by making great incisions in their bodies, and particularly in the thigh, from which they received the blood in their hands to offer as a sacrifice to the goddess. In their wild enthusiasm they often predicted bloodshed and wars, the defeat of enemies or the besieging of towns. Consult Fowler, 'Roman Festivals' (London 1899).

**BELLOT,** bĕl-lō, **Joseph René,** French naval officer and Arctic explorer: b. Paris 1826; d. 21 March 1853. At the age of 16 he entered the Naval Academy at Brest, and two years afterward received a commission as *élève de marine* on board the *Berceau.* He was promoted, for bravery in the French expedition against Tamatave in 1845, to the rank of *élève* of the first class, and also created a chevalier of the Legion of Honor, though not yet 20 years old. On his return to France in 1847 he was made a sub-lieutenant, and shortly after a two-years' voyage to South America in the *Triomphante* he volunteered his services on the *Royal Albert* schooner, fitted out by Lady Franklin, in June 1851, to search for her husband, Sir John Franklin. During this expedition he reached with a sledge party the strait now known by his name. The expedition failed in its main object, but an interesting journal of it, kept by Bellot, was published after his death. In June 1853, he sailed again on board the *Phœnix,* under command of Captain Inglefield, on a new Arctic expedition, the principal object of which was to convey dispatches to Sir Edward Belcher, then commanding H.M.S. *Assistance* in the Polar seas. Arrived in Erebus and Terror Bay, where lay the *North Star,* whose commander, Captain Pullen, was absent on a journey of discovery, Captain Inglefield set out in search of him; but in his absence it became desirable to get the despatches conveyed to Sir Edward Belcher—a duty which Lieutenant Bellot undertook to perform by crossing the ice. Having set out with four sailors, a canoe and a sledge, the party got separated in a gale of wind on 18 August, and Bellot, with two others, drifted away on a piece of ice. With the view of ascertaining the direction the ice was taking, he crossed over to the opposite side of the hummock and was never more seen. A handsome granite obelisk was erected to his memory in front of Greenwich Hospital, and a provision was made for his sisters. Consult his 'Journal d'un voyage aux mers polaires,' edited with a brief biographical notice (Paris 1854).

**BELLOT STRAIT,** the passage on the north coast of North America which separates North Somerset from Boothia Felix and connects Prince Regent Inlet with Franklin Channel. Its eastern entrance was discovered in 1852 by Lieutenant Bellot (q.v.), who lost his life there. After four unsuccessful attempts it was explored for the first time by McClintock on his crowning voyage. It is about 20 miles long, and, at its narrowest part, about one mile wide, running nearly on the parallel of 72°, between granite shores which, everywhere high, rise here and there to 1,500 or 1,600 feet. Through this funnel both the winds and the waters have full play; the latter, permanent currents and flood tides alike, coming from the west. A point on the southern shore, 71° 55' N., 95° W., is the most northerly point of the North American continent.

**BELLOTTO, Bernardo,** Italian painter and engraver: b. Venice 1724; d. Warsaw 1780. He studied under his uncle, Antonio Canal, and painted perspective and architectural views. He passed much time in Germany and was a member of the Academy of Dresden, where many of his pictures are exhibited. He etched, from his own designs, views of Vienna, Dresden and Warsaw. His pictures are called by the name of CANALETTO, which he assumed. Consult Meyer, 'Die beiden Canaletti,' and 'Les deux Canaletti' (Paris 1906).

**BELLOWS, Albert F.,** American painter: b. Milford, Mass., 29 Nov. 1829; d. Auburndale, Mass., 24 Nov. 1883. In 1845 he obtained a position in the office of a Boston architect and at 19 became a partner of the firm. After a time he adopted painting for a profession and was for some years principal of the New England School of Design. He was one of the first to succeed with water-colors. He studied in Antwerp, Paris and England, becoming a National Academician (1861), and an honorary member of the Royal Belgian Water Color Society (1868). His landscapes are his best work. Of these the best are 'Study of a Head' (1876); 'Autumn Woods' (1876); 'New England Homestead' (1878); 'Sunday in Devonshire' and 'The Village Elm.'

**BELLOWS, George Wesley,** American painter: b. Columbus, Ohio, 12 Aug. 1882. He was graduated from the Ohio State University in 1905, and studied painting in New York under Robert Henri and others. Though known chiefly as a landscape painter, he has interested himself also in portraiture and the painting of figure subjects. His pictures at various American exhibitions rapidly attracted notice and he was made associate to the Academy of Design at the age of 26, receiving the title of Academician in 1913. Meanwhile one of his works, entitled 'Up the Hudson' had been placed in the Metropolitan Museum in New York and another, the 'North River,' in the Pennsylvania Academy. 'The Coast of Maine,' 'Club Night' and 'Forty-Two Kids,' a swimming scene, are among his most successful paintings. Further examples of his art in public institutions are 'The Snow-Capped River' at the Savannah Gallery; 'Polo at Lakewood' in the Columbus, Ohio, Museum; 'Blackwell's Bridge' at Toledo, Ohio, and 'Skating' at the Art Institute of Chicago. He has, besides, painted portraits and figure compositions, the latter — some of which he has executed in lithography as well — being often in a spirit of social satire along the lines laid down by John Sloan and others. The popular nature of his painting with its employment of the dashing technique now in vogue among many artists has won him prizes at the National Academy, (1908 and 1913), at the Pittsburgh, Philadelphia, Panama-Pacific and other exhibitions.

**BELLOWS, Henry Whitney,** American Unitarian clergyman and writer: b. Walpole, N. H., 11 June 1814; d. 30 Jan. 1882. He was graduated at Harvard in 1832, and at the Divinity School there in 1837. He became pastor of All Souls Church, New York, 1839; became widely known as a pulpit orator, public speaker and writer; was chief founder and long editor of the *Christian Inquirer* (1846); chief originator of the United States Sanitary Commission and its president during the Civil War (1861–65). His services in this connection were of incalculable value to the country. During the Civil War he supervised the expenditure of more than $5,000,000 and the distribution of supplies valued at over $15,000,000. He assisted Peter Cooper in his plans for Cooper Union. He wrote 'Public Life of Washington' (1866); 'Relation of Public Amusements to Public Morality'; 'The Old World in Its New Face; Impressions of Europe in 1867–68' (2 vols., 1868–69); 'The Treatment of Social Diseases' (1857); 'Restatements of Christian Doctrine' (1860).

**BELLOWS,** machine for blowing fire, so formed as, by being dilated and contracted, to inhale air by an orifice which is opened and closed by a valve, and to propel it through a tube upon the fire. The invention of bellows is ascribed to Anacharsis the Scythian, though probably it took place in different countries. The forms of bellows at present are very various, as many attempts have been made for the improvement of this highly important machine, which becomes necessary wherever a powerful flame is required in the arts. As mining was carried on at an early date in Germany, and great heat is required in smelting the ores and working the metals, various new kinds of bellows were invented in that country, one of which consists of an empty box, which moves up and down in another, partially filled with water. Between the bottom of the empty box and the surface of the water is a space filled with air, which is driven out by the descent of the enclosed box. Bellows of very great power are generally called blowing-machines (q.v.), The common Chinese bellows consist of a box of wood about two feet long and one foot square, in which a thick, square piece of board, which exactly fits the internal cavity of the box, is pushed backward and forward. In the bottom of the box, at each end, there is a small conical or plug valve to admit the air, and valves above to discharge it. The common bellows does not give a continuous blast but only a series of puffs. To remedy this two bellows were used, one filling while the other was blowing. The double bellows was an even greater improvement. This machine has a third board placed between two main boards; this third board is fixed and both it and the lower board are fitted with valves opening inward. A weight on the lower board keeps the lower chamber filled with air and when raised the air flows into the upper chamber in which the nozzle is placed. A weight on the upper board tends to force the air from the upper chamber through the nozzle in a continuous stream. However, the blast is not uniform and the use of the bellows is limited to domestic fireplaces and ordinary forges. Consult Weisbach, 'Mechanics of Air Machinery' (New York 1905).

**BELLOWS FALLS,** Vt., village in the town of Rockingham in Windham County, on the Connecticut River, so called from several rapids and cataracts occurring there. The whole descent is about 44 feet. It was formerly a famous place for spearing salmon. A canal with locks has been cut around the falls, through the solid rock. The scenery is romantic, and various interesting minerals are found

in the vicinity. Ample power is furnished by the falls and is utilized in the several manufactories which turn out dairy tools, machinery, paper, paper boxes and shirts. The lumber trade is also extensive, and farming is carried on in all the surrounding land. The village contains a public library, hospital, meeting house and is the seat of the Vermont Academy. It was settled as early as 1753, was organized as a town in 1761 and incorporated in 1833. It is governed by a president and four trustees. The waterworks are the property of the village. Pop. 4,883.

**BELLOWS-FISH.** See GLOBE-FISH.

**BELLOY,** bĕl-lwä, **Pierre Laurent Buirette de,** French dramatist: b. Saint Flour, Auvergne, 17 Nov. 1727; d. 5 March 1775. The first French dramatist who successfully introduced native heroes upon the French stage. He was designed by his uncle, a distinguished advocate in the Parliament of Paris, who reared him after his father's death, for his own profession, but while he applied himself to the law with reluctance, he showed much genius for the drama. His uncle opposed this taste, and the young man secretly left his house. He next made his appearance as an actor under the name of "Dormont de Belloy." Belloy had hoped to reconcile his family to him by the success of his first tragedy, 'Titus,' but this hope was disappointed by the failure of the piece; and the author went to Saint Petersburg. He returned to France, where he brought out his tragedy 'Zelmire,' which met with complete success. In 1765 followed his 'Siege of Calais,' a tragedy which produced a great sensation, and is still esteemed, though it owes the applause bestowed on it rather to its subject than to its poetical merit. He received the medal promised by the King to those poets who should produce three successful pieces, and which was awarded on this occasion only, the 'Siege of Calais' being counted as two, it being, in fact, only the second successful piece of Belloy. The city of Calais sent him the freedom of the city in a gold box. Belloy wrote sundry other dramatic pieces, of which 'Gaston and Bayard' procured his reception into the Academy.

**BELLS,** a term used aboard ship to signify the time of day. The hours are struck by the ship's bell, not as on land, one stroke for each hour, but by a system which limits the strokes to eight, each stroke representing half an hour of a four hours' watch. The day is divided into six watches, of four hours each, beginning with noon or midnight. Thus half-past 12 is represented by one bell; one o'clock is denoted by two bells, struck in rapid succession. Half-past one is struck with three bells, the first two strokes in quick succession and the third after a longer interval. Two o'clock is struck by four bells, the first two and the second two strokes, in rapid succession, being separated by an interval. At four o'clock the watch is ended with eight bells, half-past four being struck again by one bell. The watch from 4 P.M. to 8 P.M. is divided into two, each known as the "dog watch," when the "watch on deck" shifts with the "watch below," so that the periods on duty may be varied every other day, but this does not affect the system of time-keeping.

**BELLS, The,** the title of one of Edgar Allan Poe's most famous poems. It is also the name of the dramatic sketch in which Henry Irving appeared most successfully, adapted from Erckmann-Chatrian's 'Le Juif polonais.' It is a psychological study of remorse; an innkeeper murders a merchant who stops with him over night, and he is so haunted by his crime that the jingling of the merchant's sleighbells are constantly ringing in his ears, finally driving him insane.

**BELL'S PALSY,** named after Sir Charles Bell (q.v.), a palsy of the muscles of the face supplied by the seventh or facial nerve, and due to some peripheral lesion, in distinction to facial palsy of a central, or of a nuclear origin. It may occur on both sides of the face. The causes are many, but exposure to cold, such as sleeping in the open with the wind blowing over the face, or sitting by an open window in a railway train or steamboat, is one of the most frequent causes. It may also occur in a multiple neuritis that is due to poisoning by alcohol, lead, arsenic or the poison of diphtheria, etc., and in rare instances from fractures of the skull. It comes on suddenly, the patient often waking in the morning to find one side of his face stiff, and in two or three days the palsy has developed. There is a sense of discomfort on the paralyzed side. The patient cannot close one eye completely and cannot manage his food on the affected side. He cannot whistle, and his speech is peculiar. The wrinkles of the paralyzed side are smoothed out and every motion of the facial muscles seems to be an exaggerated one, so that many patients say their face is drawn to one side, the reality being that it is the opposite side that is affected and immovable. The paralysis usually gets well in from three to five months, especially if the treatment is begun early and perseveringly followed out. Some patients never entirely recover, although much improvement takes place in practically all. The treatment is electrical, massage and general tonics, the administration of iron and strychnine and treatment and removal of the cause. Particular attention should be paid to the care of the paralyzed eyelid. (See also FACIAL PARALYSIS; PARALYSIS). Consult Starr, 'Text-book of Organic Nerve Diseases' (1903).

**BELLUNO,** bĕl-loo'nō, Italy, a northern city, capital of a province of the same name, on the Piave, 48 miles north of Venice. It has a cathedral, containing some excellent paintings. The campanile is 217 feet high. There is a handsome theatre. It has manufactures of silk, straw-plait, leather and wax; the principal trade is in silk, lumber, wine and fruit. Pop. (1911) 22,342.

**BELLWOOD,** Pa., borough in Blair County, 124 miles west of Harrisburg and 120 miles east of Pittsburgh, on the main line of the Pennsylvania Railroad. It was incorporated in 1888. Its assessed value is $650,000 and there is a borough debt of $55,000. It has 10 miles of paved streets, two public schools, two banks, eight churches, hotels and a weekly newspaper. It has also a fine Y. M. C. A. building, costing $50,000. Its industrial establishments include machine shops, iron foundries and railroad repair shops. It has

good electric-light service and a good water supply. The government is vested in a burgess and elective council. Pop. 3,500.

**BELMAR**, N. J., borough in Monmouth County, on the Atlantic coast, 55 miles south of New York City, on the Pennsylvania, the New York and Long Branch and the Central of New Jersey railroads. It is famed as a summer resort, has a splendid bathing beach, clubhouse, public library, borough building, a high school and eight graded public schools and a national bank, eight churches and numerous hotels and boarding-houses. It has manufactories of muslin underwear and shirt waists. The value of its taxable property is about $3,000,000. The borough expenses amount to about $80,000 annually. The borough owns and operates the waterworks — an artesian system. Pop. 2,500.

**BELMONT, August**, American banker: b. Alzey, Germany, 1816; d. 24 Nov. 1890. He was educated at Frankfort, and was apprenticed to the Rothschild's banking house in that city when 14 years old. In 1837 he went to Havana to take charge of the firm's interests, and soon afterward was sent to New York, where he established himself in the banking business and as the representative of the Rothschilds. He was Consul-General of Austria 1844–50; became chargé d'affaires at The Hague in 1853; and was Minister-resident there in 1854–58. He was a delegate to the Democratic National Convention in 1860, and when a portion of the delegates withdrew and organized the convention in Baltimore he was active in that body, and through it became chairman of the Democratic National Committee, an office he held till 1872. He was an active worker in the party till 1876, when he closed his political career.

**BELMONT, August**, American banker: b. New York, 18 Feb. 1853; son of the preceding. He was graduated at Harvard University in 1875; at once entered his father's banking house, and on the death of his father became head of the firm of August Belmont & Company, also representing the European banking firm of the Rothschilds. The house, under the management of the son, has continued to exert the large influence in the financial and railroad affairs of the city and country that it gained under its founder. In February 1900 he organized the Rapid Transit Subway Construction Company to back John B. McDonald, who had been awarded the $35,000,000 contract for the construction of a rapid-transit system in New York. He was elected president of the National Civic Federation in 1905, and was re-elected in 1906. In 1905 he was appointed treasurer of the Democratic National Committee. He has also served as chairman of the board of directors of the Interborough Consolidated Corporation, the Interborough Rapid Transit Company and the Rapid Transit Subway Construction Company.

**BELMONT, Perry**, American lawyer: b New York, 28 Dec. 1851 (son of August Belmont 1816–90). He was graduated at Harvard University in 1872, and at Columbia College Law School in 1876; was admitted to the bar and practised in New York till 1881, when he was elected as a Democrat to Congress and served till 1887, being a member of the committee on foreign affairs, and in that capacity, in his first term in Congress, came into notice by his cross-examination of James G. Blaine, then ex-Secretary of State, as to his relations with a syndicate of American capitalists interested in Peruvian guano. In 1885 he was appointed chairman of the committee on foreign affairs, and in 1888 United States Minister to Spain. In 1889 he was commissioner to the Universal Exposition in Paris, and for his services received from the President of France, in 1890, the decoration of commander of the Legion of Honor. He was one of the principals in the rapid-transit contract in New York, in which his brother August (q.v.) was interested. He is a member of the Navy League and of the New York Chamber of Commerce.

**BELMONT**, Cape Colony, town midway between Orange River Junction and Kimberley. It was the scene of one of the earliest engagements in the war of 1899–1900, between the Boers and the British under Gen. Lord Methuen. The town was attacked by the British on 23 Nov. 1899, while on the march to the relief of Kimberley, and the battle resulted in a victory for them. Two days later Lord Methuen took Graas Pan, 10 miles north of Belmont, after again defeating the Boers.

**BELMONT**, N. Y., county-seat of Allegany County, on the Erie and Buffalo & Susquehanna railroads and the Genesee River, 93 miles west of Elmira. The surrounding country is a prosperous farming and dairying community. In the town are a number of flour mills and condensed milk factories, as well as a public library, a high school and a State agricultural college. Pop. 1,094.

**BELMONTET**, bĕl-mŏn-tā, **Louis**, French poet and publicist: b. Montauban, 26 March 1799; d. Paris, 14 Oct. 1879. He studied and practised law in Toulouse until involved in difficulties with the magistracy on account of some satirical poems, when he went to Paris and there produced his principal works: 'The Sad Ones' (1824), a cycle of elegies; 'The Supper of Augustus' (1828); and with Soumet, 'A Festival of Nero' (1829), a tragedy which exceeded 100 performances. In 1830 he edited the *Tribune* newspaper, opposed the accession of Louis Philippe and predicted his downfall and a second revolution in a bold pamphlet addressed to Chateaubriand, for which he was arrested. In 1839 he established, together with Messrs. Laffitte and Mauguin, a manufactory, in which the men were to share the benefits with the employers. In 1852 he became a member of the legislative assembly. Subsequently he became an ardent partisan of Bonapartism, pleading its cause as a journalist and poetically extolling the Napoleonic dynasty in many enthusiastic odes.

**BELODON**, an extinct reptile (*B. Plieningeri*) of the Triassic period, partly intermediate between dinosaurs and crocodiles, but with many archaic characters. The body was protected by bony plates, those on the back interlocking by a peg-and-socket joint. The snout was long and narrow, the external nares behind in contrast to their position in modern crocodiles, where they are at the tip of the snout. The limbs were longer than those of modern crocodiles, but the proportions were

otherwise similar. Its remains have been found in the Triassic coal-beds of North Carolina and Pennsylvania, and the red beds (estuarine sediments) of New Mexico, as well as in European strata of corresponding age. It was early described by Jaëger under the name phytosaurus, since he considered it herbivorous because of an error due to the fossilization.

**BELOIT,** Kan., city and county-seat of Mitchell County, on the Missouri Pacific and the Union Pacific railroads and the Solomon River, 184 miles west of Atchison. Besides being the seat of the State Industrial School for Girls, it has an opera house, a large post-office building and a library. Being in a grain-producing country, the city contains a number of grain elevators and flour mills. A rock quarry gives the city a considerable trade in building stones. Pop. 3,082.

**BELOIT,** Wis., city in Rock County, on the Rock River, and the Chicago & N. W. and Chicago, M. & St. P. railroads, 85 miles southwest of Milwaukee and 91 miles west of Chicago. The city derives fine power for manufacturing from the river, and has the second largest wood-working machinery plant in the world, besides manufactories of gas-engines, windmills, iron, paper-mill machinery, paper, rye flour (the oldest mill of its kind in the country), gasoline engines, agricultural implements, tools, scales and shoes. The United States census of manufactures for 1914 reported 50 industrial establishments of factory grade, employing 3,826 persons, of whom 3,527 were wage earners receiving a total of $2,346,000 annually in wages. The capital invested aggregated $9,647,000, and the value of the year's output was $6,928,000; of this $3,915,000 was the value added by manufacture. The city is widely known as the seat of Beloit College (q.v.). It was first settled in 1836, and received its city charter in 1856. It is governed by a mayor, chosen for two years, and a council. Pop. (1910) 15,125; (1914) 17,100.

**BELOIT COLLEGE,** a coeducational (non-sectarian) institution in Beloit, Wis.; organized in 1846 by the Congregational and Presbyterian Churches. Reported at the end of 1916: Professors and instructors, 37; students, 388; volumes in the library, 56,000; grounds and buildings valued at $600,000; productive funds, $1,500,000; income, $94,000; number of graduates, 1,503.

**BELOMANCY,** divination by arrows, practised by the ancient Scythians and other nations. One of the numerous modes was as follows: A number of arrows, being marked, were put into a bag or quiver, and drawn out at random, and the marks or words on the arrow drawn determined what was to happen. Consult Ezekiel, xxi, 21. (See SUPERSTITION).

**BELON,** be-lôn', **Pierre,** French naturalist and writer: b. Soulletière, 1517; d. 1564. He was first a medical student, then traveled extensively in the Orient, devoting himself at the same time to a close observation of nature. His works form the distinct beginnings of the sciences of ornithology and comparative anatomy. His books include 'Les observations de plusieurs singularités et choses mémorables trouvées en Grèce' (1551); 'Judée, Egypte, Arabie, et autres pays étranges, rédigées en trois livres' (1553–58); 'Histoire naturelle des étranges poissons marins' (1551); 'Histoire de la nature des oiseaux, avec leurs pourtraics gravés en bois; plus la vrai peinture et description du Dauphin et de plusieurs autres raies de son espèce' (1555).

**BELOOCHISTAN.** See BALUCHISTAN.

**BELOT,** bĕ-lō', **Adolphe,** French novelist and dramatist: b. Pointe-à-Patre, 6 Nov. 1829; d. Paris, 17 Dec. 1890. He traveled extensively and settled at Nancy as a lawyer. He won reputation with a witty comedy, 'The Testament of César Girodot' (1859, with Villetard); and, being less successful with his following dramatic efforts, devoted himself to fiction. Of his novels may be mentioned 'The Venus of Gordes' (1867, with Ernest Daudet); 'The Drama of the Rue de la Paix' (1868); 'Article 47' (1870); all of which were dramatized.

**BELOVED DISCIPLE, The,** a name by which Saint John is sometimes known, from the reference to him in John xiii, 23, wherein he is described as "one of His disciples, whom Jesus loved."

**BELOVED PHYSICIAN, The,** a name sometimes applied to Saint Luke. Consult Colossians iv, 14.

**BELPER,** England, market town of Derbyshire, on the left bank of the Derwent, over which there is a handsome stone bridge of three arches, eight miles north of Derby, on the Midland Railway. It has three churches, besides other places of worship, a public hall, with reading-rooms, library, etc. There are large cotton-mills, first established in 1776, hosiery works, engineering works, foundries and collieries. It is a thriving town and has recently been much improved. Pop. 11,640.

**BELPHEGOR.** (1) An arch-demon appointed by Pluto and his council to undertake an earthly marriage, who fled unable to endure female companionship. He has been made the subject of one of La Fontaine's 'Contes' and also of an English play by Wilson, 'Belphegor, or the Marriage of the Devil,' published in 1691.

(2) An English play by Charles Webb, translated and adapted from the French 'Paliasse,' in which the chief character is Belphegor, a mountebank. Another play of this name has appeared since.

(3) One of the deities of the Moabites, worshipped with peculiarly disgusting rites.

**BELSHAM, Thomas,** English Unitarian clergyman: b. Bedford 1750; d. 11 Nov. 1829. He became pastor of the Dissenting congregation and theological tutor of an academy at Daventry in 1781. At this time he was a Calvinist, but a change of views unfitted him for this situation and he became tutor of an academy which had been recently established at Hackney. This institution soon failed for want of funds and Belsham removed first to the Gravel Pit Chapel, which had been occupied by Dr. Priestly, and afterward to Essex Street Chapel, where he officiated for some time as the colleague of Lindsey, and latterly as sole pastor till his death in 1829. His works are chiefly of a controversial nature and probably attracted attention as much from the celebrity of the works which they attacked as from their own merits. His first appearance in the polemical

field was as an opponent of Wilberforce, of whose celebrated 'Practical View of the Prevailing Religious Systems' he published a review. His doctrine regarding the person of Christ represents the humanitarian view. He also published a work on mental and moral philosophy and 'Memoirs of Mr. Lindsey' (1812, reprinted Boston 1873), which was reviewed by the celebrated Robert Hall. Consult his 'Memoirs,' edited by J. Williams (London 1883). His brother, WILLIAM BELSHAM (b. 1752; d. 1827), wrote much on history and was the author of numerous political pamphlets espousing the cause of the Whigs. He is the author of a 'History of Great Britain from 1688 to 1820' (14 vols., London 1805–24).

**BELSHAZZAR,** mentioned in the book of Daniel as the son of Nebuchadnezzar and the last of the Chaldæan dynasty who reigned at Babylon, who was slain and his empire subjugated in the Median conquest under Darius. The last king, however, according to history and the monumental inscriptions, was Nabonidus, who had a son named Bel-surra-user, who was probably associated with him in the government and is supposed to have been slain at the battle of Akkad, in the successful campaign of Cyrus in which Babylon fell (B.C. 539). The interesting circumstances which immediately preceded this event, and are recorded at length in the book of Daniel, have repeatedly furnished subjects to painters and poets.

**BELT, The Great and Little,** two straits of Denmark, connecting the Baltic with the Cattegat. The former runs between the islands of Zealand and Funen, and is about 15 miles wide, where it is crossed from Nyborg, in Funen, to Corsoer, in Zealand. The greatest breadth of the strait is 20 miles. The navigation is very dangerous, on account of the many small islands and sandbanks by which the channel is impeded. The Little Belt is between the island of Funen and the coast of Jutland, and the narrowest part of the strait is not more than a mile wide. At this place stands the fortress Fredericia, where tolls were formerly paid. The fortress completely commands the entrance from the Cattegat. The Sound, between Zealand and the Swedish coast, is preferred for all large vessels entering or leaving the Baltic.

**BELT,** in astronomy, a varying number of dusky, belt-like bands or zones encircling the planet Jupiter parallel to his equator, as if the clouds of his atmosphere had been forced into a series of parallels through the rapidity of his rotation, and the dark body of the planet was seen through the comparatively clear spaces between.

**BELTANE.** See BAAL.

**BELTON,** Tex., city and county-seat of Bell County, situated on the Leon River, 56 miles northeast of Austin City, and on the Gulf C. & S. F. and the Missouri, Kansas & Texas railroads. Baylor Female College (Baptist) is located here, and there is a county courthouse and a Carnegie library. It is in a cotton-growing district, near some good building-stone quarries, and has a considerable export trade; its chief manufactories are cotton-mills, a cottonseed oil-mill, flour-mills, foundries, lumber yards and marble works. Pop. 5,000.

**BELTRAFFIO,** bĕl-trăf'yō, or **BOLTRAFFIO, Giovanni Antonio,** Italian painter: b. Milan 1467; d. 1516. He was a pupil of Leonardo da Vinci and imitated him in the treatment of his subject and in the use of color. Among his works, the best of which are in his native city of Milan, are several portraits; a 'Virgin and Child,' in the National Gallery, London, and a 'Madonna of the Casio Family.'

**BELTRAMI,** bĕl-trä'mē, **Eugenio,** Italian mathematician: b. Cremona, 16 Nov. 1835; d. 18 Feb. 1900. He studied at Pavia. In 1862 he was professor at Bologna, then professor at Pisa, Rome and Pavia, and in 1891 again at Rome. He was president of the Academy of the Lincei. His work has been chiefly in non-Euclidian geometry, in which he did valuable work; also in electricity and magnetism. His 'Mathematical Works' (1902) and 'Bibliography of Mathematics' (1901) were published by the University of Rome after his death.

**BELTRAMI, Giovanni,** Italian lapidary: b. Cremona 1779; d. 1854. He was self-educated and at the time of French rule in Italy found a patron in Eugene Beauharnais for whom he made a chain of 16 cameos, illustrating the story of Psyche. Among his other notable works is a reproduction of the 'Last Supper' of Leonardo da Vinci on a topaz.

**BELUGA,** or **BIELAGA,** bē-lä'gą. See STURGEON.

**BELUS,** the Roman name of the Assyrian and Babylonian divinity called Bel in Isaiah xlvi, 1.

**BELUS,** a Phœnician river at the base of Mount Carmel. Its fine sand, according to tradition, first led the Phœnicians to the invention of glass.

**BELUS, Temple of,** an enormous temple in ancient Babylon, rebuilt by Nebuchadnezzar about 604 B.C. Its site is thought by some authorities to be the modern Bers-Nimrud, and by others Babil, both situated near Hillah.

**BELVEDERE,** bĕl-vĕ-dēr' (It. "*fine sight*"). A name given in Italy to buildings destined for the enjoyment of prospects. The name is also given to small cupolas on houses built for the advantage of fresh air, or of the view which they afford. Many of the buildings in Rome are furnished with such cupolas; yet the term "belvedere" is generally applied only to those on the palaces of the rich. This is the name also of a part of the Vatican where the famous statue of Apollo is placed, which, on this account, is called Apollo Belvedere. Other buildings so named are an open hall in the imperial gardens at Schönbrünn, the palace of Prince Eugène in Vienna, and a summer-house in the royal palace, Prague.

**BELVIDERE,** bĕl-vĭ-dēr', Ill., city and county-seat of Boone County, on the Kishwaukee River, and the Chicago & N. W. Railroad, 78 miles northwest of Chicago. An important farming and dairying trade centre, and contains railroad shops, one of the largest sewing-machine and bicycle works in the country, manufactory of sewing-machine supplies, flour-mills, creamery and other industries; and has a public library, opera house, a courthouse, county-record building, two national banks, sev-

eral daily and weekly periodicals and a property valuation of about $2,000,000. Settled in 1836, it was incorporated in 1857. It is governed by a mayor, elected biennially, and a city council. Pop. 7,253.

**BELVIDERE**, N. J., town and county-seat of Warren County, on the Pennsylvania and Lehigh & Hudson River railroads and the Delaware River, 62 miles northwest of Trenton. It is an industrial centre of some importance, having a large silk mill, furniture, felt and hosiery factories and a number of flour mills, all of which are supplied with power from Pequest Creek where it empties into the Delaware. Pop. 1,764.

**BELZONI**, bĕl-zō'nē, **Giovanni Battista** (JOHN BAPTIST), Italian traveler: b. Padua 1778; d. 3 Dec. 1823. Destined for a monastic life he was educated at Rome, but left the city when it was occupied by the French and in 1803 went to England, where he acted in Astley's amphitheatre. Here he acquired, besides an acquaintance with the English language, much knowledge of the science of hydraulics, the study of which had been his chief occupation in Rome and which afterward carried him to Egypt. He left England after a residence of nine years and took his way through Portugal, Spain and Malta to Egypt. There he lived from 1815 to 1819, at first as a dancer, till he won the favor of the pasha. Belzoni kept the rude inhabitants of the country in awe by his extraordinary stature and strength. The object of his journey to Egypt was to build a hydraulic engine for Mohammed Ali, to raise the waters of the Nile. Here he met Burckhardt and Salt and by them was advised to take up the exploration of Egyptian antiquities. He opened the second of the pyramids of Ghizeh, known by the name of Cephrenes. In the year 1816 he succeeded in transporting the bust of Memnon from Thebes to Alexandria, whence it was taken to the British Museum. In 1817 he entered several catacombs near Thebes, especially one in a fine state of preservation in the valley of Biban el Molook, which is considered to be the mausoleum of Psammetichus, and from which he took the splendid alabaster sarcophagus which is now in the British Museum. On 1 August in the same year he opened the temple of Ipsambul, near the second cataract of the Nile, which two Frenchmen, Cailliaud and Drovetti, had discovered the year before, but had not succeeded in opening. Belzoni discovered a subterranean temple in its ruins, which until that time had been unknown. He then visited the coasts of the Red Sea and the city of Berenice, discovering the emerald mines of Zubara and made an expedition into the oasis of Jupiter Ammon. Belzoni refuted Cailliaud's assertion, that he had found the famous Berenice, the great emporium of Europe and India, by subsequent investigations on the spot, and by the actual discovery of the ruins of that great city four days' journey from the place which Cailliaud had taken for Berenice. Belzoni's 'Narrative of the Operations and Recent Discoveries within the Pyramids, Temples, Tombs and Excavations in Egypt and Nubia; and of a Journey to the Coast of the Red Sea in Search of Berenice; also of another to the Oasis of Jupiter Ammon' (London 1820), accompanied by a folio volume of 44 copper-plate engravings, was received with general approbation. Padua, his native city, requited his present of two Egyptian statues from Thebes with a medal by Manfredini. In the year 1823 this enterprising traveler had made preparations for passing from Benin to Hausa and Timbuktu, when he died at Gato, on his way to Benin, 3 Dec. 1823. His knowledge of draughtsmanship was of great service to him in his archæological researches. In 1829 his widow published his fine drawings of the royal tombs of Thebes. He believed the Nile and Niger to be different streams, and that the Niger emptied its waters into the Atlantic Ocean; opinions which have long been proved to be correct.

**BEM, Jozef**, a distinguished military commander: b. Tarnow, in Galicia, 1795; d. Aleppo, Syria, 1850. He was educated at the University of Cracow, and in 1810 was admitted into the corps of cadets founded at Warsaw by Napoleon, afterward entered the horse artillery, and took part as lieutenant in the expedition of the French army in Russia. For the bravery here displayed by him he received the decoration of the cross of the Legion of Honor. On hearing of the outbreak of the Polish revolution, he at once hurried to Warsaw; and during the whole of the Polish struggle he displayed great gallantry and military skill. On the night of 7 Sept. 1831, he held the bridge of Praga with his artillery, but the following morning, on hearing of the agreement concluded with the Russians, withdrew to Modlin. After the fall of Warsaw he went to Prussia, and in 1832 to Paris, where he was occupied partly with political schemes, partly with scientific pursuits. Upon the commencement of the Austrian insurrection in 1848, Bem proceeded there and took a prominent part in conducting the defense of Vienna against the imperial troops. Toward the end of the year he received a commission from the new Hungarian government to undertake the conquest of Transylvania, and crossed over into that territory at the head of a large army, raised by his own exertions in an incredibly short space of time. His progress here was marked with great success, with occasional checks; and in March 1849, he succeeded in driving the Austrians, with their Russian auxiliaries, into Wallachia. He subsequently made an incursion into the Banat, which he compelled Puchner to evacuate. Returning to Transylvania, he found himself opposed by overwhelming numbers, and, after several reverses, returned to Hungary, where he took part in the disastrous battle of Temesvar. Shortly after he went to Turkey, became a convert to Mohammedanism, and received an appointment in the Sultan's army under the name of Amurath Pasha. He wrote a work on mnemonics entitled 'Exposé général de la methode mnémonique polonaise.' Consult Czetz, 'Bems Feldzug in Siebenbürgen' (Hamburg 1850); and Lajos, N., 'Le général Bem' (Paris 1851).

**BEMA**, bē'mä (Gr. *bēma*, a step, raised place), the name applied in the Greek Church to the sanctuary because of its position above the rest of the church. The inconostasis or choir screen divides it from the main portion of the church.

**BĒMAN, Wooster Woodruff,** American mathematician: b. Southington, Conn., 28 May 1850. Graduating from the University of Michigan in 1870, he was appointed instructor in Greek and mathematics at Kalamazoo College. A year later he was appointed to the same position at the University of Michigan, where he became professor of mathematics in 1887. In collaboration with David Eugene Smith he wrote 'Plane and Solid Geometry' (1895); 'Higher Arithmetic' (1897); 'Famous Problems in Elementary Geometry' (1897); 'New Plane and Solid Geometry' (1899); 'Elements of Algebra' (1900); 'A Brief History of Mathematics' (1900); 'Academic Algebra' (1902).

**BEMBATOKA, Bay of,** a safe and commodious bay on the northwest coast of Madagascar, lying in lat. 16° S. and long. 46° E. The river Betsiboka, with the Ikiopa, drain into the bay; the former, about 300 miles long, is navigable for small steamers for about 90 miles. Mojanga, on the north side of the bay, is the second town in the island, with about 14,000 inhabitants, Bembatoka being but a village.

**BEMBERG,** bän-bār, **Henri,** French composer: b. Paris 1861. He studied at the Paris Conservatory, where he had among his teachers Dubois, Franck, and Massenet. His principal works are 'Le Baiser de Luzon,' a one-act opera (1888); and 'Elaine,' a four-act opera successfully produced in London 1892, and in New York 1894. He is popularly known as the author of many songs and works for piano. In his native land he is regarded principally as a dramatic composer.

**BEMBICIDÆ,** bĕm-bĭs'ĭ-dę, a family of wasp-like hymenopterous insects with stings, mostly natives of warm countries, and known also as sand-wasps. The female excavates cells in the sand, in which she deposits, together with her eggs, various larvæ or perfected insects stung into insensibility, as support for her progeny when hatched. The insects are very active, fond of the nectar of flowers and delight in sunshine. *Bembix* is the typical genus of the family.

**BEMBO, Pietro,** Italian scholar and writer: b. Venice, 29 May 1470; d. 18 Jan. 1547. At Ferrara he completed his philosophical studies, and after visiting Rome went, in 1506, to the court of Urbino, at that time one of those Italian courts where the sciences stood highest in esteem. In 1512 he went to Rome, where Pope Leo X made him his secretary. His many labors arising from his office, as well as his literary pursuits, and perhaps too great an indulgence in pleasure, having impaired his health, he was using the baths of Padua when he was apprised of the death of Leo X. Being by this time possessed of several church benefices, he resolved on withdrawing entirely from business, and on passing his days at Padua, occupied only with literature and science, and enjoying the society of his friends. Bembo collected a considerable library; had a cabinet of medals and antiquities, which at that time passed for one of the richest in Italy, and a fine botanical garden. In the year 1529 the office of historiographer of the republic of Venice was offered to him, which he accepted, declining the salary connected with it. At the same time he was nominated librarian of the library of Saint Mark. Pope Paul III, having resolved upon a new promotion of cardinals, from the most distinguished men of his time, conferred on him, in 1539, the hat of a cardinal. From that time Bembo renounced the *belles-lettres,* and made the Fathers and the Holy Scriptures his chief study. Of his former labors he continued only the 'History of Venice.' Two years later Paul III bestowed the bishopric of Gubbio on him, and soon after the rich bishopric of Bergamo. Bembo's influence on the literature of Italy was deep and lasting. By his works, especially the 'Prose della volgar lingua' (1525) he helped bring about the triumph of classic tradition in Italian. In poetry he aroused an increased interest in Petrarch and the resulting imitation of the latter by the Italian poets for a long period is known as *bembism.* A collection of all his works appeared in 1729, at Venice, in four folio volumes. Consult Fletcher, J. B., 'The Religion of Beauty in Woman' (New York 1911); Spingarn, 'History of Criticism in the Renaissance' (2d ed., New York 1906); Symonds, 'Renaissance in Italy' (London 1881); Trabalza, 'Storia della grammatica italiana' (Padova 1908).

**BEMBRIDGE BEDS,** in geology, a fossiliferous division of the Oligocene strata, principally developed at Bembridge, in the Isle of Wight, consisting of marls and clays resting on a compact, pale-yellow or cream-colored limestone, called Bembridge limestone. They exhibit a rich molluscan and insect fauna.

**BEMENTITE,** a mineral occurring at Franklin Furnace, N. J., in radiated-stellate masses. It has a grayish-yellow color and pearly lustre, is soft and has a specific gravity of about 3.0. It is a hydrous silicate of manganese, having the formula $H_3MnSiO_4$. It was named in honor of C. S. Bement, whose unrivaled private collection of minerals is now in the American Museum of Natural History in New York city.

**BEMIDJI,** Minn., city and county-seat of Beltrami County, on the Great Northern, the Minneapolis, Red Lake & Manitoba and the Minneapolis, Saint Paul & Sault Sainte Marie railroads, 180 miles west of Duluth. It has a State normal school and several Federal buildings. Lumbering is the principal industry of the neighborhood. Bemidji is also a popular summer resort, being situated on the shore of a picturesque lake. Pop. (1910) 5,099.

**BEMIS, Edward Webster,** American economist and public utility expert: b. Springfield, Mass., 7 April 1860. He was graduated at Amherst College in 1880; received degree of Ph.D. in 1885 at Johns Hopkins University after over three years' advanced work in economics and history; was a pioneer lecturer in the university extension system, 1887–88; professor of economics and history, Vanderbilt University, 1889–92; and associate professor of economics, University of Chicago, 1892–95. In 1897 he was professor of economics and history in the Kansas State Agricultural College. He was superintendent of the city water department of Cleveland, Ohio, 1901–09; deputy commissioner of water supply, gas and electricity of New York, 1910; consulting expert for cities and

States on public utilities since 1910. He is now a member of the advisory board, valuation division, Interstate Commerce Commission, city representative on board of supervising engineers, Chicago Traction, and director of valuations of public utilities for the District of Columbia, the city of Dallas and other places. He published 'Municipal Monopolies' (1899) and many scientific studies of co-operation, trades unions, immigration, etc., but since 1900 has chiefly confined his writing to technical reports for various public bodies.

**BEMIS HEIGHTS,** N. Y., village in Saratoga County, on the Hudson River, famous as the scene of the first battle of Stillwater, 19 Sept. 1777. See also SARATOGA, BATTLE OF.

**BEMISS, Samuel Merrifield,** American surgeon in the Confederate army: b. Nelson County, Ky., 15 Oct. 1821. He received his early training and education from his father, Dr. John Bemiss, and from private tutors, and was graduated at the medical department of New York University in 1846. He practised in Bloomfield, Ky., until 1853, when he removed to Louisville, and in 1858 became connected with the medical department of the University of Louisville, filling various chairs, and at times was secretary and vice-president. From 1862 to 1865 he was a surgeon in the Confederate army. After the war he settled in New Orleans, and in 1866 he became professor of the theory and practice of medicine in the University of Louisiana. He became a member of the State board of health and of the American Medical Association, being its vice-president in 1868, and of other medical societies. He contributed papers to the literature of his profession, among which are 'Essay on Croup' and 'Report on Consanguineous Marriages.' He was also editor of the New Orleans *Medical and Surgical Journal.*

**BEMMEL, Peter von,** German painter: b. Nuremberg 1685; d. 1754. He was educated by his father, also an artist, and was employed by the Prince Bamberg, Franz Konrad von Stadion in adorning the walls of his palaces. Many of his paintings are preserved at Bamberg and Brunswick. Of the Bemmel family 14 were prominent as artists.

**BEN** (Hebrew, son), a prepositive syllable found in many Jewish names, as Bendavid, Benasser, etc., which, with the Jews in Germany, has been changed into the German sohn (son), for example, Mendelssohn, Jacobssohn, etc. In Arabic the plural form Beni occurs in the names of many tribes, as Beni Omayyah and in those of places, as Beni Hassan.

**BEN, BEINN,** or **BHEIN,** a Gaelic word signifying mountain peak or head, and prefixed to the names of many mountains in Scotland north of the firths of Clyde and Forth, as Ben Nevis and Ben MacDhui. It also occurs in Ireland, as Ben Eadar, Eadar's mountain (the modern Hill of Howth), and Nephin (Gaelic *Neamh-bhein,* white mountain). Pen, which occurs in Welsh and Cornish nomenclature, is a corresponding term. The term *Pen* is also found in the Pennine Alps and in the word «Apennines,» and some hold that it occurs in somewhat disguised form in the Cévennes of France.

**BEN, Oil of,** the expressed oil of the bennut, the seed of *Moringa aptera,* the ben or horse-radish tree of India, northern Africa and Arabia. The oil is inodorous, does not become rancid for many years, and is used by perfumers and watchmakers. In perfumery it is used in extracting the fragrant principles of various plants.

**BEN BOLT,** a noted poem by Thomas Dunn English (1843) set to an old German air. It had been partially forgotten when it was revived by its effective employment in Du Maurier's 'Trilby.'

**BEN HUR: A Tale of the Christ,** a popular novel, by Lew Wallace, published 1880. The scene of the story is laid in the East, principally in Jerusalem, just after the Christian era. The first part is introductory, and details the coming of the three wise men, Melchior, Kaspar and Balthasar, to worship the babe born in the manger at Bethlehem. In the course of the narrative, which involves many exciting adventures of Ben Hur, hero, John the Baptist and Jesus of Nazareth are introduced, and Ben Hur is converted to the Christian faith through the miracles of our Lord. The tale has been successfully dramatized, its spectacular features, especially the chariot race, having made it a prime favorite.

**BEN HUR, The Tribe of.** A fraternal beneficial society founded upon Gen. Lew Wallace's book, 'Ben Hur,' a tale of the Christ, the life of the young Hebrew, Ben Hur, furnishing the attributes of devotion to family and people and faith in God. The society was organized in Crawfordsville, Ind., in 1894 by David W. Gerard, Frank L. Snyder and others. Through this society Gerard found opportunity to express and put in operation a broad and practical system of mutual philanthropy and, though defective in its financial plan, yet so far was the plan in advance of fraternal operation of the time that for more than 20 years it successfully carried out the purposes of its founders. In 1908 the society adopted the National Fraternal Congress table of mortality as a basis upon which to determine the benefits to be provided and contributions to be collected therefor, and this table of mortality has since become the legal standard of this (Indiana) and many other States. The beneficial department of the Society provides substantial benefits upon the death or disability of its members. The benevolent purposes of the Society are carried out by means of local courts or lodges chartered by the supreme or governing body. At the close of 1915 the Society had over 100,000 members in 1,356 local organizations, and had paid to the beneficiaries of its members over $14,000,000 in benefits.

**BEN-LAWERS,** a huge pyramidal mountain of Scotland, Perthshire, on the north bank of Loch Tay, 3,984 feet above the level of the sea, or 4,004 with the cairn at the top. Many rare Alpine mosses and other plants are found on it.

**BEN-LEDI,** a Scottish mountain, lying northwest of Callander, Perthshire, reaching the height of 2,875 feet above sea-level. It is somewhat difficult of ascent, but gives a splendid view. High up on it there is a small loch. It is mentioned in Scott's 'Lady of the Lake.'

Its name, *Ben le Dia*, "God's mountain," was bestowed by the Druids, who were wont to celebrate the Bealteine, or sun-festival, on its summit.

**BEN-LOMOND**, a Scottish mountain at the western extremity of Stirlingshire, on the east shore of Loch Lomond. The ascent is divided into three great stages, and the top has an elevation of 3,192 feet above sea-level. On the southeastern side it presents a sheer precipice of about 2,000 feet. From the hotel at Rowardennan, on the east shore of the loch, to summit, the distance is four miles. The lower part is well wooded, and the upper affords excellent healthful pasture. It commands a most extensive prospect of the vale of Stirlingshire, the Lothians, the Clyde, Ayrshire, Isle of Man, Hills of Antrim, and all the surrounding highland territory. Like Ben-Lawers this is one of the botanical gardens of the highlands.

**BEN-MORE** (the great mountain), a conical hill between Loch Dochart and Loch Voil, western part of Perthshire, among the Braes of Balquhidder. It rises to an elevation of 3,843 feet above the level of the sea. Several other hills also bear this name.

**BEN-MUICH-DHUI**, bĕn-măk-doo'ę, or **BEN-MAC-DHUI** (Gael. *Ben-na-muice-dubh*, mount of the black pig), the second highest mountain in Scotland, situated in the southwest corner of Aberdeenshire, on the borders of Banffshire. It is a granite mass, rising to the height of 4,296 feet, and forms one of a cluster of lofty mountains, among which are Brae-riach, Cairntoul, Cairngorm, Ben-a-bourd and Ben-A'an. Its upper parts are bare of vegetation. The view from the top includes the Moray Firth, the hills of Caithness and Sutherland, Ben Nevis, Benmore, etc.

**BEN NEVIS** (Gael. *ben*, mountain, + *neamhis*, heavenly), a Scottish mountain now ascertained to be the most lofty height in Great Britain, is situated in the southwestern extremity of Inverness-shire, immediately east of Fort William and the opening of the Caledonian Canal into Loch Eil. It rises from the brink of the latter piece of water to the height of 4,406 feet. In clear weather a view can be obtained from its summit across nearly the whole of the north of Scotland from sea to sea. It consists principally of a fine brown porphyry, and contains red granite of a beautiful grain. Its base has a circumference of 24 miles. It has some very lofty precipices, and in its fissures the snow remains unmelted, even in the warmest weather. An observatory occupied by a resident staff was established on the top of the mountain by the Scottish Meteorological Society in 1883.

**BENADIR**, bĕn'ä-dēr', administrative district in Italian Somaliland, at the mouth of the Juba River, on the east coast of Africa. In 1892 this territory was leased from the Sultan of Zanzibar for a small annual sum, but in 1905 it was purchased for $700,000. The Italian administration is enforced by a police force and a garrison of about 3,000 men. Cattle and cotton are exported in considerable quantities. Mogadisho is the largest town, with a population of about 10,000, being also the administrative centre.

**BENAIAH**, bĕ-nā'yą, the name of 12 different persons mentioned in the Bible, the most important being a son of Jehoiada, a chief priest. He figures as a mighty and valiant warrior who overcame two Moabite champions, slew an Egyptian giant with the giant's own spear, went down into a dry cistern and slew a lion that had fallen in while it was covered with snow, and killed the rebels Adonijah and Joab. He was made commander-in-chief in Joab's place by Solomon.

**BENALCAZAR**, bā-nąl-kā'thär, **Sebastian de**, Spanish leader, the first conqueror of Popayan, New Granada: b. about the end of the 15th century, at Benalcaz, in Estremadura, Spain; d. 1550. He set out as a common sailor in the train of Pedrarias, the newly appointed governor of Darien, 1514. The ability and daring of young Sebastian gained for him the confidence of Pizarro, who sent him against the Indian leader, Ruminahui. Sebastian was favored at the moment of engagement by a happy accident; the volcano of Cochabamba suffered an eruption. The frightened Peruvian army fled to Quito and Sebastian then possessed himself of the smoking ruins of this city. From here he passed northward and conquered the territory possessed by a chief named Popayan, whose name he preserved to designate the territory over which the former had held sway. Inflamed by the speeches of an Indian captive, who spake strange words about a chief farther north, anointed with gold powder, Benalcazar and his band determined to visit and conquer this *El Dorado*, or chief of gold. After traversing vast forests, in 1534, he arrived at the country which afterward received the name of New Granada. Arrived there, he found himself forestalled by two other Spanish adventurers or conquistadores. He returned to Popayan, and was made governor of this province by a decree dated 1538. When La Gasca succeeded in supplanting Diego Pizarro, he deprived Sebastian of his governorship.

**BENARD**, bā-när', **Henri Jean Emile**, French architect: b. Goderville 1844. As a student of the Ecole des Beaux Arts in Paris, he competed for and won the Prix de Rome in 1867. In 1899 he was the winner out of a hundred competitors for the plans for the University of California. With some modifications his plans have been followed in the building of the university buildings, at a cost so far of $10,000,000.

**BENARES**, bĕ-nä'rĕz, India, a division in the Northwestern Provinces with an area of 10,414 square miles, largely made up of rich cultivated flats on each side of the Ganges. The heat in summer is excessive, but in winter fires are requisite. About 50 per cent of territory is irrigated by wells and canals. Garden stuffs, grain of different kinds, flax for oil and sugar, are the principal objects of cultivation. Rice, for which many parts of the soil seem well adapted, is seldom grown. Muslins, silks and gauzes, salt, indigo and opium are made very extensively. The principal town is Benares. Pop. about 5,368,600, about 90 per cent Hindu.

**BENARES** (in Sanskrit, *Vārānasī*), Hindustan, a town in Northwest Provinces, in the

division of the same name, on the left bank of the Ganges, from which it rises like an amphitheatre, presenting a splendid panorama of temples, mosques, palaces and other buildings, with their domes, minarets, etc. Fine ghauts lead down to the river. It is built of freestone and contains many handsome and highly decorated houses, but the height of the houses and narrowness of the streets give it all the usual inconveniences of an Asiatic town. Kasi the Splendid, as the Hindus commonly call it, is one of the most sacred places of pilgrimage in all India, being the headquarters of the Hindu religion. To die at Benares is the greatest happiness for a Hindu, because he is then sure of immediate admission into heaven. The number of pious foundations and temples is exceedingly great. There is a continual influx of wealthy pilgrims into the city, and many of the Hindu princes have a town residence here. The principal temple, called Bisheswar, is dedicated to Siva. Aurungzebe built a splendid mosque on the highest ground in the city, and it is the most prominent object from the river side. At the end of the 17th century an observatory was erected in this city by one of the rajahs, which still exists. One of the temples has a great number of sacred monkeys attached to it. Altogether there are about 1,500 Hindu temples. Among the municipal structures are the government college, hospitals, town-hall, asylums, swimming baths and waterworks. Benares carries on a large trade in the produce of the district and in English goods, and manufactures silks, shawls, embroidered cloth, jewelry, etc. The merchants and bankers are numerous and wealthy. There are few English inhabitants, except the government officers, and the members of the various missions. Kasi was ceded to the East India Company by the Nabob of Oude in 1775. During the mutiny of 1857 a serious outbreak occurred here. The Benares College was opened in 1791. It is maintained by the government and includes the Sanskrit College, with over 400 students, and the English College, with about 100. It occupies a fine building, completed in 1852. Pop. about 204,000. Consult Sherring, 'Sacred City of the Hindus' (1869); Havell, 'Benares, the Sacred City' (1911).

**BENAVENTE**, bĕ-nä-vĕn-te, **Y MARTÍNEZ, Jacinto**, Spanish dramatist: b. Madrid, 12 Aug. 1866. His father, Mariano Benavente, was a specialist in children's diseases, and enjoyed high repute in Madrid. He studied at the University of Madrid, at first intending to follow the law, but failed to complete the course. For a time he traveled with a circus and subsequently appeared upon the stage, upon which he has ever since been an occasional performer. His first publication was a volume of poems (1893), which was followed by 'Vilanos' (or 'Thistledown'), 'Figurines' and 'The Ladies' Letter Writer,' impressionistic sketches of great subtlety and delicacy of workmanship, which display strong French influence. These works have the same significance in the renascence of Spanish letters as the early canvases of Sorolla, exhibited at Madrid in the year 1893, in the rebirth of Spanish painting. In this year also Ignacio Zuloaga completed his sojourn of apprenticeship in Paris. Benavente produced his first play, 'El Nido Ajeno' ('Thy Brother's House'), in 1894. Two years later 'Gente Conocida' ('In Society') established his reputation. 'The Banquet of Wild Beasts' (1898) placed him at the head of Spanish playwrights. It was succeeded by a remarkable series of satirical comedies, as also by a number of plays of serious import, the effect of which was for a time obscured by the dazzling brilliance of his satire. As editor of *La Vida Literaria*, a periodical in which he gathered about him the writers whose names were to become famous in the new Spain, Benavente gave form and substance to the modern movement, of which he assumed intellectual leadership. In 'Autumnal Roses' and 'The Evil Doers of Good' (1905), he reached the maturity of his powers, and 'The Bonds of Interest' ('Los intereses creados') (1907) and 'Princess Bebé,' acted in 1909, established his hegemony among the writers of the Spanish-speaking world. His plays are to-day the most popular and frequently performed in the Spanish repertory. In 1913 he was admitted into the Spanish Academy upon the occasion of the performance of his fine peasant tragedy 'La Malquerida.' He is a lecturer and contributor to the periodical press on a wide variety of topics and has made translations from the English, Catalan and French. In his 'Nuevo Coloquio de los Perros' (1916) he deliberately challenged comparison with the dialogue of the same name by Cervantes, with whose work his own has much in common. The drama of Benavente is a drama of character, with predominant human and social interest. He has done away with all melodramatic artificiality, in which respect the theatre as it exists in Spain to-day must be regarded as his creation. Consult Bonilla y San Martín, 'Jacinto Benavente' (*Ateneo*, Madrid, I, No. 1, 1906); 'Plays by Jacinto Benavente,' with an introduction by John Garrett Underhill (New York 1917, *et seq.*).

JOHN GARRETT UNDERHILL.

**BENAVENTE Y ROCAMORA, Enrique**, Spanish writer: b. Reus, Tarragona, 8 Sept. 1837. Rather early in life he showed a decided inclination for the study of languages and for many years taught with great success in Madrid. He was professor of French for several years at the Municipal College of Saint Ildefonso and founded the well-known Benavente Lyceum, of which he was the director from its institution. At an educational exhibition held in Madrid in the 80's Benavente was awarded a medal for his method of teaching. He has contributed to several educational periodicals, and has also written novels both in Spanish and French. His published works include 'Solución práctica de la política española'; 'El idioma francés al alcance de los españoles;' 'La mano de Providencia,' a novel.

**BENBOW, John**, English admiral: b. Shrewsbury, England, 1653; d. Jamaica, 4 Nov. 1702. After serving for some time in the navy he entered the merchant service, and fought so desperately against a pirate from Sallee, in one of his trips to the Mediterranean, about the year 1686, as to beat her off, though greatly his superior in men and metal. He re-entered the navy after the Revolution, and was employed in protecting the English trade in the

channel, which he did with great effect. His valor and activity secured him the confidence of the nation, and he was soon promoted to the rank of rear-admiral, and charged with operations against Dunkirk and the French coasts. In 1698 he was sent to put down the pirates in the West Indies, and not long after returning, he again sailed to the West Indies with a small fleet, having accepted a command previously declined by several of his seniors, from the supposed superiority of the enemy's force in that quarter. On 19 Aug. 1702, he fell in with the French fleet under Du Casse, and for five days maintained a running fight with them, when he at length succeeded in bringing the enemy's sternmost ship to close quarters. In the heat of the action a chain-shot carried away one of his legs. His officers offered their sympathy. "I had rather have lost them both," he replied, "than have seen this dishonor brought upon the English nation. But, harkye — if another shot should take me off, behave like men, and fight it out." He was taken below; but the moment the dressing had been applied to the wound he caused himself to be brought again on deck, and continued the action. At this critical instant, being most disgracefully abandoned by several of the captains under his command, who signed a paper expressing their opinion that "nothing more was to be done," the whole fleet effected its escape. Benbow, on his return to Jamaica, brought the delinquents to a court-martial, by which two of them were convicted of cowardice and disobedience of orders, and condemned to be shot; which sentence, on their arrival in England, was carried into execution at Plymouth. Consult Clowes, 'Royal Navy' (Vol. II, London 1897); Fletcher, 'Admiral Benbow' in *Macmillan's Magazine* (Vol. LXXXIV, London 1901).

**BENCH,** in law, the seat which judges or magistrates occupy officially in a court of justice; the court or tribunal itself, also the judges or magistrates sitting together to try cases in contradistinction to the bar. The Court of Common Pleas in England was formerly called *Bancus,* the Bench, as distinguished from *Bancus Regis,* the King's Bench. It was also called *Communis Bancus,* the Common Bench, and this title is still retained by the reporters of the decisions in the Court of Common Pleas. Mention is made in the Magna Charta "*de justiciariis nostris de Banco,*" which all men know to be the justices of the Court of Common Pleas, commonly called the Common Bench, or the Bench. Viner, Abr. Courts (n. 2). The King's Bench (Queen's Bench during the reign of a queen) was formerly the highest court of common law in Britain. Since 1875 it is included in the High Court of Justice.

**BENCH-MARK,** a mark placed upon some permanent object, as a stone or wall, for use in tidal observations and leveling surveys. Its position above the zero of the tide-gauge or other datum level is made a matter of record and any level once established may be readily ascertained at a future period. It is usually made upon some durable material, as the stone foundation of a pier. In tidal observations a bench-mark is made and its height above the zero of the tide-gauge is recorded immediately so that in case the latter is destroyed, it may be set up again by means of the bench-mark. In leveling engineers and surveyors make extensive use of bench-marks and to them refer all levels measured.

**BENCH WARRANT,** a warrant issued by the court before which an indictment has been found to arrest the accused, that he may appear and find bail for his appearance at the trial. Where a bench warrant is directed to the sheriff it cannot be executed by one having only verbal authority from the sheriff, and such arrest does not discharge the recognizance. A bench warrant is defective which does not direct that the party shall be brought before some judge or justice.

**BENCHERS,** in England, senior members of the Inns of Court, who have the entire management of their respective inns, the power of punishing barristers guilty of misconduct, and the right to admit or reject candidates to the bar. See also INNS OF COURT.

**BENCOOLEN,** bĕn-koo'lĕn (Dutch, *Benkoelen*), Sumatra, a seaport on the southwest coast; long. 102° 19′ E.; lat. 3° 47′ 36″ S. The English settled here in 1685, and in 1690 the East India Company built a fort here, calling it Fort York. It rose to some eminence as a centre for trade and coffee growing. In 1825 Bencoolen was yielded up to the Dutch in exchange for the settlements on the Malay Peninsula. A convenient river on its northwest side conveys pepper out of the inland country; but there is great inconvenience in shipping it, by reason of a dangerous bar at the river's mouth. The place, which is almost two miles in compass, is known at sea by a high, slender mountain, which rises in the country 20 miles beyond it, called the Sugar Loaf. It is inhabited by a mixed population. The medium heat throughout the year is from 81° to 82°. Pepper is the chief produce of the adjacent country, which is mountainous and woody. The place is unhealthy and subject to earthquakes; storms are frequent. Pop. about 12,000.

**BENCZUR,** bĕn'tsoor, **Gyula (Julius),** Hungarian artist: b. Nyiregyhaza 1844. He studied with Hiltensperger, Anschütz and Piloty. He was made professor at the Acedemy of Munich in 1880 and was subsequently director of the Academy of Parnking in Budapest. His distinction was recognized by his nomination as a member of the Hungarian House of Magnates. His paintings, which are of the School of Piloty, are noted for their splendid coloring. Among the most celebrated are 'Farewell of Ladislas Hunyady' (1867); 'Arrest of Rákóczy in 1701' (1869); 'Louis XV in the Boudoir of Dubarry' (1870); 'Family of Louis XVI during the Assault on Versailles' (1872); owned by D. O. Mills, New York; 'Baptism of Saint Stephen' (1875); 'Bacchanti' (1881); 'The Reconquest of Buda by Charles of Lorraine' (1888).

**BEND,** in heraldry, one of the nine honorable ordinaries, containing a third part of the field when charged, and a fifth when plain, made by two lines drawn diagonally across the shield from the dexter chief to the sinister base point. The bend sinister differs only by crossing in the opposite direction, diagonally from the sinister chief to the dexter base. It indicates illegitimacy.

**BENDA, Franz,** German violinist: b. Jungbunzlau, Bohemia, 1709; d. Potsdam, 1786. He exhibited, while a boy, a great desire to learn the violin which he could gratify in no other way than by joining a band of strolling musicians. He found means, however, to acquire an extraordinary mastery of the instrument, and in 1732 entered the service of Frederick the Great, then prince-royal, with whom he remained the rest of his long life. He founded a school of violinists, whose method of playing was entirely original and quite effective. He also published some excellent solos for the violin.

**BENDA, Georg,** German musician, the most distinguished of a notable musical family: b. Jungbunzlau, Bohemia, 1721; d. Köstriz 1795. He was bandmaster to the Duke of Gotha (1748–87), and in this period produced several operas and cantatas, such as 'Ariadne auf Naxos' and 'Medea.'

**BÉNDALOU, Paul,** a soldier of the American Revolutionary army: b. Montauban, France, 15 Aug. 1755; d. Baltimore, Md., 10 Dec. 1826. In October 1776 he embarked at Bordeaux for the United States as a volunteer in the cause of liberty, and, on reaching the headquarters of Washington, received a lieutenant's commission. Transferred to the command of Pulaski he was captain of the first company in his famous legion at the siege of Savannah. There he carried off the field the body of the generous Pole, and preserved, also, the standard of the legion which had been wrought and presented by the wives and daughters of Maryland. He was quartermaster-general with the rank of colonel, in the Maryland militia during the War of 1812, and for many years United States marshal for the Circuit and District Courts of Maryland, his official conduct, from first to last, being marked with exactness and integrity.

**BENDAVID,** bĕn-dä'-vĭt, **Lazarus,** German-Jewish mathematician and philosopher: b. Berlin, 18 Oct. 1762; d. there 1832. After his graduation from the University of Berlin he lectured for some years on the philosophy of Kant in Vienna. His lectures being discouraged by the Austrian government he returned to Berlin, where he found employment under the government. He is the author of 'Uber die Parallellinien' (Berlin 1786); 'Versuch einer logischen Auseinandersetzung des mathematisch-unendlichen' (Berlin 1796); 'Versuch über das Vergnügen' (2 vols., Vienna 1794); 'Vorlesungen über die Kritik der reinen Vernunft' (Vienna 1795); 'Vorlesungen über die Kritik der praktischen Vernunft' (Vienna 1796); 'Vorlesungen über die Kritik der Urteilskraft' (Vienna 1796); 'Rede über den Zweck der Kritischen Philosophie' (Vienna 1796); 'Selbstbiographie' (Berlin 1804).

**BENDEMANN,** bĕn'dĕ-mạn, **Eduard,** German painter: b. Berlin, 3 Dec. 1811; d. Düsseldorf, 27 Dec. 1889. As early as 1832 his great picture of the 'Jews Mourning in Exile' was exhibited at Berlin, and in 1837 he gained the gold medal at Paris. In 1838 he was appointed professor of the Academy of Art at Dresden. Here he was entrusted with the execution of the larger frescoes in the palace, and on these his fame chiefly depends. In 1858 he was appointed director of the Düsseldorf Academy, a post which he held until 1867. He afterward produced several large canvases and frescoes, some of which are among his best works. Tytler, 'Modern Painters and their Paintings' (1899).

**BENDER,** Russia, a city in the government of Bessarabia. It is situated on the Dniester, 55 miles from its mouth, and 36 miles from Kishinev, the capital of the government, and is a straggling place, chiefly consisting of low houses and mere huts. It contains several churches, synagogues a mosque and a gymnasium for women. It formerly possessed a strong fortress but this was dismantled in 1897. Its commerce is important. It has a trade in grain, timber, cattle, animal products and wine. In 1770 the Russians captured the city and put the garrison and inhabitants, about 30,000, to the sword. After being several times taken from the Turks by the Russians, it has belonged to Russia since the Peace of Bucharest, in 1812. Pop. 33,800, mostly Jewish with a blend of Russians, Armenians and Tartars.

**BENDER ABBAS,** Persia, seaport in the Strait of Ormuz. It was once of considerable commercial importance but its trade has diminished within recent years. The chief exports passing through this port are fruit, tobacco, wool, carpets and opium, amounting to about $2,300,000 a year. The population, about 20,000, is composed of Armenians, Arabs and Kurds, beside the native Persians.

**BENDIGO,** formerly SANDHURST, Australia, city in Bendigo County, Victoria, on Bendigo Creek, fully 100 miles north-northwest of Melbourne with which it has direct railway communication. It is one of the chief cities in the colony and an important railway centre. Along one side of its main street (Pall Mall) there are fine buildings of brick and stone, and facing these, in Rosalind Park, are the elegant government buildings and the law courts, which together cost nearly £80,000. Other buildings worthy of mention are the handsome town-hall; mechanics' institute, with library and school of mines; free library; temperance, masonic and other halls; hospital, benevolent asylum; some fine banks; Anglican, Wesleyan, Presbyterian and other churches; Roman Catholic cathedral, art gallery, jail, state and other schools, etc. The public parks comprise, besides the Rosalind Park, the fine Botanic Gardens and two others largely used for sports. The streets are lighted by gas and electricity, and there is an excellent water supply from large reservoirs near the town. The chief industry of the district is gold mining, which gives employment to 5,000 miners. Other important industries are brewing, iron-founding, stone-cutting, granite-polishing, tanning and the manufacture of pottery, bricks, tiles, cordials, etc. Agriculture and viticulture are carried on in the district and there is a trade in wine and fruits. Bendigo was founded at the time of the gold discovery in 1851, it became a municipality in 1855, a borough in 1863 and a city in 1871. Nearly £70,000,000 worth of gold has been obtained here, much of it from quartz reefs. Pop. (1911) 39,417, including about 300 Chinese. Consult Mackay, 'History of Bendigo' (1901).

**BENDIRE,** bĕn-dē're, **Charles Emil,** German-American military officer and ornithologist:

b. Darmstadt, Germany, 27 April 1836; d. 1897. He came to the United States in 1852, and entering the army in 1854, served through the Civil War, becoming a captain in the 1st Cavalry. After the war he was transferred to the West, and was retired 24 April 1886. During his stay in the West he applied himself to the study of ornithology, and collected a vast amount of material in various branches of natural history. In 1870 he began to collect the eggs of North American birds, which finally numbered more than 8,000 specimens, and this collection he presented to the United States National Museum. He is the author of 'The Life Histories of North American Birds, with Special Reference to their Breeding Habits and Eggs.'

**BENDZIN,** bĕn'jĕn, Russian Poland, the capital of a district in the government of Piotrkow, situated on the Black Przemsza, 264 miles from Warsaw, on a branch of the Warsaw & Vienna Railroad. Its chief industry is the zinc works, under government control; there are also coal mines in the vicinity, and a considerable manufacture of fireproof bricks. The interesting ruins of an ancient castle are a feature of the town. Pop. 21,200, more then one-half of which is Jewish.

**BENE,** bĕn'ę, the plant that furnishes oil of sesamum.

**BENEDEK, bā'nĕ-dĕk, Ludwig von,** Austrian military officer: b. Odenburg, Hungary, 14 July 1804; d. Gratz, 27 April 1881. He was educated at the Academy Wiener-Neustadt and joined the army as ensign in 1822. By 1846 he was colonel and won further recognition in suppressing the insurrection in Galicia. He fought against the Italians in 1848, and afterward against the Hungarian patriots. He distinguished himself at Solferino in the campaign of 1859, being the last to leave the field at Solferino; he was military governor of Hungary in 1860 and soon after was made commander of the Austrian army in Venetia; and in the war with Prussia in 1866 commanded the Austrian army till after his defeat at Sadowa, when he was superseded.

**BENEDETTI,** bā-nā-dĕt't'ę, **Vincent** (COMTE DE), French diplomatist of Italian extraction: b. Bastia, Corsica, 29 April 1817; d. Paris, 28 March 1900. He was educated for the public service, held consulates in Cairo, Palermo, Malta and Tunis; and as secretary of the Congress of Paris in 1856 drew up the protocols of the treaty then agreed upon. In 1861 he was appointed Ambassador to Italy, and in 1864 to Prussia. Great excitement was aroused throughout Europe by the publication in the London *Times* on 13 July 1870 of the alleged draft of a secret treaty between France and Prussia, in which the latter agreed to a French occupation of part of Belgium. The authenticity of the document was not denied. The French government declared that although Benedetti had written the document, he had done so at the dictation of Bismarck. At the same time Benedetti was under orders to protest against the candidature of Prince Leopold of the house of Hohenzollern for the crown of Spain. He became so importunate in trying to carry out these orders that he was forbidden to seek further interviews with King William. The refusal of the King to again receive Benedetti gave great offense in France, and was made a pretext for declaring war within a few days. After the fall of the empire, Benedetti withdrew from public life. In 1871 he published a pamphlet charging Bismarck with the whole responsibility of the secret treaty, to which the latter made a vigorous reply. Benedetti was author of 'Ma mission en Prusse' (1871); and 'Essais diplomatiques,' an English translation of which appeared in 1895.

**BENEDETTO DA MAIANO** (or MAJANO) dä mä-yä-'nō (real name BENEDETTO DI LEONARDO), Italian sculptor and architect: b. Florence 1442; d. there 27 May 1497. He was the son of Leonardo da Maiano, a stone mason and builder, in whose family the trades and those allied to them seem to have been a tradition. Of Benedetto's two brothers, one was a carpenter and the other, Giuliano, was an architect, wood-carver and terra cotta worker. Benedetto, indeed, seems to have begun his career in the workshop of Giuliano who was by 10 years his senior. The tradition of the family was again carried on when one of Benedetto's four sons became a wood-carver. The first independent work of Benedetto's is the tomb of Saint Savinus in the cathedral of Faenza, probably dating from 1471–72. The execution of the monument is already so masterly that some authorities have thought it should be assigned to a later date. By 1474, Benedetto was established in Florence, at least for some time, and we have reason to think that the orders he received from other cities, such as Arezzo, Siena and Naples, were executed in the Florentine workshop and sent to their destination ready for setting up in place. Shortly after 1474 Benedetto produced the famous pulpit of the Church of Santa Croce — the finest example of marble pictorial relief in Italian sculpture. It is the most imposing of his works and one which must be referred entirely to his own genius. About the same time he was at work in the Palazzo Vecchio (Municipal Palace) of Florence, which he enriched with architectural and sculptural decorations. That his art was remunerative may be judged from the fact that in 1480 Benedetto and his brother founded a family chapel in Prato. We find the artist working for Loreto in the succeeding years, with another great patron in King Ferdinand of Naples. But the work which has probably done most for his fame is the building of Palazzo Strozzi in Florence. He did not live to see it finished (it was begun in 1489) but there can be little doubt that the conception is his, that he saw the gigantic palace rise to its second story, that he planned its structure and designed its court. His sculptural portrait of Filippo Strozzi (the marble of which is in the Louvre and the clay model in Berlin) shows the kinship between the conceptions of the two parts as practised by the great Florentine — it also shows his appreciation of the character of the man who was suited by the warrior-palace he had asked for. A striking contrast with this construction is found in Benedetto's Loggia of Santa Maria delle Grazie at Arezzo, which has all the fineness and charm that the name suggests. As sculptor and architect Benedetto will stand for all time among pure and noble figures of Florentine art.

We may note further the following important works by him: the altar of Santa Fina at

San Gimignano, the ciborium of San Domenico in Siena, the tabernacle of the Badia at Arezzo, and the Madonna of the Berlin Museum. Consult for reproductions and comments on his sculpture Bode's 'Denkmäler der Renaissance Skulptur Toskanas' (Vol. VII, Munich 1892–1905); for his architecture, Stegmann and Von Geymüller, 'Architektur der Renaissance in Toscana' (Vol. IV, Munich 1885–1908).

**BENEDICITE**, bĕn-ę-dĭs'ĭ-tę, the song of the 'Three Children' in the fiery furnace, as given in the Apocrypha and the Septuagint version of Daniel, which is a part of the Roman Breviary in the office of lauds; it is also a part of the Anglican morning prayer, to be used when the Te Deum is not sung, usually from Septuagesima to Easter and during Advent. It was sung in the Church as early as the time of Saint Chrysostom. The name originated in the opening sentence, "Benedicite omnia opera Dei" ("Praise all the works of God").

**BENEDICT, Saint,** the founder of the first religious order in the west: b. Norcia, Italy, 480; d. 21 March 543. While yet a youth he retired to a cavern situated in the desert of Subiaco, 40 miles from Rome, and for three years dwelt in a cavern (afterward called the Holy Grotto). He afterward founded 12 monasteries. In 515 he drew up a rule for his monks, which was first introduced into the monastery on Monte Cassino, in the neighborhood of Naples, founded by him (529) in a grove of Apollo after the temple had been demolished. This gradually became the rule of all the western monks. The abbots of Monte Cassino afterward acquired episcopal jurisdiction and a certain patriarchal authority over the whole order. Benedict, with the intention of banishing idleness, prescribed, in addition to the work of God (as he called prayer and the reading of religious writings), the instruction of youth in reading, writing and ciphering, in the doctrines of Christianity, in manual labors (including mechanic arts of every kind), and in the management of the monastery. With regard to dress and food, the rule was severe but not extravagant. Benedict caused a library to be founded, for which the aged and infirm brethren (*ordo scriptorius*) were obliged to copy manuscripts. By this means he contributed to preserve the literary remains of antiquity from ruins; for though he had in view only the copying of religious writings, yet the practice was afterward extended to classical works of every kind; and the world is indebted for the preservation of great literary treasures to the order of Saint Benedict.

**Bibliography.**— Doyle, F. C., 'Teachings of Saint Benedict' (London 1887); Henderson, G. F., 'Historical Documents of the Middle Ages' (pp. 274–314, ib. 1892); Lechner, 'Life and Times of Saint Benedict' (ib. 1900); Speitzenhofer, S., 'Die historische Voraussetzungen der Regel des heiligen Benedict von Nursia' (Vienna 1895); Wölfflin, 'B. von Nursia und seine Mönchsregel' (Leipzig 1895). See BENEDICTINES.

**BENEDICT I,** succeeded John III 575; d. 578, and was himself succeeded by Pelagius II.

**BENEDICT II,** succeeded Leo II, 684: d. 685, and was succeeded by John V. He decided the English controversy in favor of Wilfrid of York and was canonized because of his virtues.

**BENEDICT III,** succeeded Leo IV, 855. The Emperor Lothair opposed his election, but he was acknowledged finally. He did much to improve and beautify the ecclesiastical edifices of Rome. During his pontificate, the Saracens were ravaging Apulia and Campania; d. 858, and was succeeded by Nicholas I.

**BENEDICT IV,** succeeded John IX, about 900. He crowned Louis, son of Boson, King of Italy. He was famed for his charity to the poor; d. 903, and was succeeded by Leo V.

**BENEDICT V,** succeeded John XII, 964, and was appointed by the Romans in opposition to Leo VIII. The Emperor Otho, supporter of Leo, appeared before Rome with an army, reduced the city to famine, and a new assembly of the clergy declared to be null the election of Benedict, who was exiled; d. in prison at Hamburg, 965.

**BENEDICT VI,** succeeded John XIII, 972. After the death of the Emperor Otho I, the Romans imprisoned Benedict, who was strangled in the castle of Saint Angelo, in 974. Owing to the mistake of later chroniclers in confusing Dominus Papa with a supposed proper name, Donus II appears in many lists of the Popes between Benedict VI and Benedict VII. Geisebrecht, in his 'Year-Book of the German Kingdom under Otho II' has clearly shown that no such Pope as Donus II ever existed.

**BENEDICT VII,** of the family of Conti, elected in 975. He promoted ecclesiastical discipline and did much to suppress simony. During his pontificate, the Emperor Otho II came repeatedly to Rome, where he died in 984. Benedict died about the same time, and was succeeded by John XIV.

**BENEDICT VIII,** of the same family, succeeded Sergius IV, in 1012. In 1016, the Saracens from Sardinia having landed on the coast of Tuscany, Benedict attacked and defeated them. He crowned the Emperor Henry II, and his wife, in the Church of Saint Peter. At the synod of Pavia he interdicted clerical marriage and concubinage; d. 1024, and was succeeded by his brother, John XIX. Consult his 'Life' by P. G. Wappler (Leipzig 1897).

**BENEDICT IX,** a relative of the two preceding Popes, succeeded John XIX in 1034. He was then very young, some say only 18 years old. He was deposed by the Romans soon after election. Conrad II reinstated him in 1038. In 1044 he was again banished by Consul Ptolemæus, but was reinstated within three months. The following year Gregory VI was declared Pope, and in 1046 all three Popes, Gregory, Benedict and Sylvester were deposed by the Emperor Henry III, who set up as Pope, Suidger, bishop of Bamberg, as Clement II. Clement died in 1047 and Benedict resumed the papal throne for eight months, when he was displaced by Leo IX. He died in the convent of Grotta Ferrata in 1056. Consult 'Life' by Gioragnoli (Milan 1900).

**BENEDICT X** was elected by a faction after the death of Stephen IX, in 1058; but the Council of Siena nominated Nicholas II. Bene-

dict did not submit till the following year, when Nicholas came into Rome; d. 1059.

**BENEDICT XI**, a Dominican, succeeded Boniface VIII, in 1303. Contemporary historians speak highly of his character and virtues. He died 1304, and was succeeded by Clement V.

**BENEDICT XII, Jacques Fournier**, a native of France, succeeded John XXII, in 1334, the Popes residing then at Avignon. He put a stop to many abuses in the distribution of ecclesiastical patronage, enforced discipline among the monastic orders, and insisted that temporal rulers should observe their compacts with the Holy See; d. 1342, and was succeeded by Clement VI.

**BENEDICT XIII, Cardinal Orsini**, succeeded Innocent XIII, in 1724, but it was with difficulty that he could be made to accept the pontificate. Benedict lived with the greatest frugality, and has been called more a monk than a Pope. He managed, however, to transact an extraordinary number of affairs. A large number of saints were included in the calendar during his pontificate. Benedict was moderate in politics and a great lover of peace, was instrumental in arranging the Treaty of Seville in 1729. His great fault was his implicit confidence in Cardinal Coscia, who much abused it. His works were published in 1728, in three volumes folio. He died in February 1731, and was succeeded by Clement XII.

**BENEDICT XIV, Prospero Lambertini:** b. Bologna 1675; d. 3 May 1758. He applied himself with success to the canon and civil law, and became advocate to the consistory at Rome. Afterward he was appointed *promotor fidei*, and wrote a valuable work on the 'Ceremonies used in Beatifications' (1734). He was passionately fond of learning, of historical researches, and monuments of art, and also associated with the distinguished men of his time; among others with Father Montfaucon, who said of him: "Benedict has two souls; one for science and the other for society." He also made himself familiar with the best poetical works, whereby his mind became elevated and his style animated. Benedict XIII made him, in 1727, bishop of Ancona; in 1728 cardinal, and in 1732 archbishop of Bologna. In every station he displayed great talents, and fulfilled his duties with the most conscientious zeal. He opposed fanaticism even at the risk of his own safety, defended the oppressed and expressed himself with the greatest frankness to Clement XII without losing his favor. When, after the death of Clement XII in 1740, the election of a new Pope in the conclave was retarded by the intrigues of Cardinal Tencin, and the cardinals could not agree, Lambertini, with his usual good nature, said to them, "If you want a saint take Gotti; if a politician, Aldobrandi; if a good old man, myself." These words, thrown out in a humorous manner, operated on the conclave like inspiration, and Lambertini, under the name of Benedict XIV, ascended the papal throne. His choice of the ministers and friends whom he assembled around him does the greatest honor to his judgment. The condition of the Church and of the Roman court had not escaped his penetration. Since the Reformation princes no longer trembled at the thunders of the Vatican. The power of the Popes in temporal affairs had notably declined, and Lambertini knew that respect for the papal authority could be maintained only by a wise moderation. He constantly regulated his measures by this principle, and thus succeeded, even in difficult circumstances, in satisfying not only the Catholic but even the Protestant princes. The sciences were a special object of his care. He established academies at Rome; promoted the prosperity of the academy at Bologna; caused a degree of the meridian to be measured; the obelisk to be erected in the Campus Martius; the church of Saint Marcellino to be built after a plan projected by himself; the beautiful pictures in Saint Peter's to be executed in mosaic; the best English and French works to be translated into Italian; and commanded a catalogue of the manuscripts contained in the Vatican library (the number of which he had enlarged to 3,300) to be printed. His government of the papal states did equal honor to his wisdom. He enacted severe laws against usury, favored commercial liberty, and diminished the number of holidays. His piety was sincere, yet enlightened and forbearing. He strove to maintain purity of doctrine and of morals, giving in his own character the most praiseworthy example. The sole reproach brought against him by the Romans was that he wrote too much and governed too little. His works compose, in the Venice edition, 16 volumes folio (1767). The most important of his works is that on the Synods, in which we recognize the great canonist. Other editions of his works are those issued under the editorship of Azevedo (12 vols., 1747–51); at Prato (17 vols., 1846). His letters were edited by F. X. Kraus (Freiburg 1884; 2d ed. as a biography by F. Scarselli, with bibliography 1888). Other letters edited by B. Manzone (Bra 1890). Consult McHilliam, 'A Chronicle of the Popes' (London 1912) and Pastor, 'The History of the Popes' (London 1906–12).

**BENEDICT XV, Giacomo della Chiesa:** b. Pegli, near seaport of Genoa, 21 Nov. 1854. Made his early studies in the town gymnasia of Genoa at the university of which he received the doctor's degree in jurisprudence. He studied theology at Rome in the Collegio Capranica and was ordained priest in 1878. He then became secretary of Cardinal Mariano Rampolla who when appointed Secretary of State in 1887 chose him as under secretary. In 1907 Mgr. della Chiesa was created archbishop of Bologna and elevated to the cardinalate 25 May 1915 and on 3 September following, after nine ballots, was elected the successor of Pius X. The tidings from the conclave were proclaimed from the upper portico of the Vatican Basilica by Cardinal della Volpe. He announced in Latin: "the great joy that we have as pope most eminent and most reverend Giacomo della Chiesa who has taken the name of Benedict XV." Points of resemblance are easily traced between Benedict XV and Prospero Lambertini, Pope Benedict the XIV who was archbishop of Bologna when elected in 1740 of whom Voltaire wrote: "This is Lambertini the honor of Rome and the father of Christendom who has fought the world by his writings and adorns it by his virtues." The

scholarship of Benedict XV is comprehensive and finished. He is a patron of arts and literature. His is a lofty and penetrating mind. In disposition he is strong and gentle. Noble and aristocratic he counts in his ancestry men distinguished by birth and deeds. From the moment of his succession to the papacy he found himself face to face with world conditions which for the difficulties they still beget and the problems they will surely create have no equal in all history. His predecessor, Pius X, succumbed to the terrible prostration forced upon him by the desolation into which all the European families were plunged by the Great War which at the present writing, that is two years after it began, is still agonizing the universe. Benedict XV stands firm fronting the terrible scenes with which hourly he is presented. He is neutral in the strictest sense of the word. His cry is an eloquent appeal for peace. His sympathy is with every fighting man and with the war widows and orphans. In 'Ubi Primum,' his declaration to the Universal Church, 8 Sept. 1914, he gives the keynote of his policy when he says: "Since following the example of our Lord, we must be ready even to lay down our life for the salvation of the flock of Christ, it is our avowed intention to leave nothing undone, in as far as in us lies, to bring the present calamity to a speedy termination." He is undismayed, and so far as his children are scattered the world over and his priests are on every battlefield and engaged in all kinds of tasks, his figure is the most conspicuous in these disastrous times. All nations look up to him, approve his efforts and are grateful. His most notable pronouncement is his encyclical 'Ad Beatissimi Apostolorum Principis,' 1 Nov. 1914. In it he refers to many matters of world-wide importance. He emphasizes the moral disorders that are admitted to be the true source of the present disturbance, the chief of which are: Lack of mutual love among men; disregard for authority; unjust quarrels between the various classes; material prosperity becoming the prominent object of human endeavor, as if there were nothing higher and better to be gained. His affection for America is very strong. The bibliography of Benedict XV is very fragmentary. Outside of some magazines and reviews and addresses there is very little information. The best material is to be found in the newspapers of his own and other countries published at the time of his accession. Consult also 'The Official Catholic Directory' (New York 1916).

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**BENEDICT, SIR Julius,** German-English pianist and composer: b. Stuttgart 1804; d. London 1885. In 1821 he went to Dresden to study under Weber, and two years later became conductor at a Vienna theatre. His first opera, 'Giacinta ed Ernesto,' was produced in Naples in 1829 without success. He took up his residence in England in 1835, and was knighted in 1871. He was for many years conductor at the Norwich festival, and during a number of seasons acted as operatic conductor in London, both for English and Italian opera. His principal works are the operas 'The Gipsy's Warning' (1838); 'The Bride of Venice' (1843); 'The Crusaders' (1846); 'The Lily of Killarney' (1862), founded on Boucicault's 'Colleen Bawn'; and 'The Bride of Song' (1864); the cantatas 'Undine' (1860) and 'Saint Cecilia' (1866); the fine oratorio 'Saint Peter' (1870); and the cantata 'Graziella' (1882).

**BENEDICT, Wayland Richardson,** American writer and educator: b. Rochester, N. Y., 9 Jan. 1848; d. 21 July 1915. Graduating from the University of Rochester in 1868, he taught school for several years, after which he entered the Rochester Theological Seminary to train as a teacher of theology. He then finished his education with a year abroad at the University of Giessen. In 1875 he was appointed professor at the University of Cincinnati, where he remained for the rest of his active life, filling at various times the chairs of history, psychology, logic and philosophy. In 1907 he retired as professor emeritus. Among his works are 'The Nervous System and Consciousness' (1885); 'Theism and Evolution' (1886); 'Outlines of the History of Education' (1888); 'Ethics and Evolution' (1889); 'New Studies in the Beatitudes (1890); 'Religion as an Idea' (1903); 'Greek Thought Movements and their Ethical Implications' (1905).

**BENEDICT BISCOP,** An Anglo-Saxon ecclesiastic: b. of a noble Northumbrian family in 628 or 629; d. Wearmouth, 12 Jan. 690. He spent the first years of his life at court, but at the age of 25 he relinquished this manner of life and accompanied Wilfrid on a pilgrimage to Rome in 653. Here he lived for more than 10 years, when he returned to England; but not very long after again went to Rome, on a mission intrusted to him by Alchfrid, King of Northumbria. On his way back he stopped at Lerins in Provence, where he remained for the next two years, making himself acquainted with the rules of monastic life in the monastery of Lerins, of which he had become a member. In 668 he made a third journey to Rome, where he arrived just at the time when the Pope was about to appoint some one to fill the see of Canterbury, which was then vacant. Having fixed upon Theodore, a Cilician monk, he requested Benedict to accompany him to England to assist him in securing the favor of the Anglo-Saxons, which as a foreigner he might have difficulty in doing. Benedict agreed to do this, and was presented with the abbacy of Saint Peter's in Canterbury; but at the end of two years he resigned the abbacy and again went to Rome. On this occasion he returned to England with a valuable collection of books and a large number of relics, which he had accumulated during his previous visits to Rome. With these he proceeded first to Wessex with the intention of remaining there, but finding that the King of Wessex was dead he returned northward to his native Northumbria, and there he was fortunate enough to secure the favor of King Egfrid. From him he received a donation of land at the mouth of the Wear, on which he founded the monastery of Wearmouth. Workmen were brought from France to build the church and monastery. In 678 he made his fourth journey to Rome, and brought back additional stores of books for his library, as well as pictures, images, glass for windows, etc., with which he decorated the monastery he had founded. Here we have one of the first in-

stances of the use of window glass in England. He was now presented by Egfrid with a further grant of land on the other side of the Wear, where he founded another monastery, that of Jarrow, dependent on the monastery at Wearmouth. During the remainder of his life he continued to live in the latter monastery, except on the occasion of a fifth voyage to Rome, made in 685, and from which he derived as before valuable additions to his various collections. It is chiefly by these collections that his services to learning are to be estimated, and there can be no doubt that his great pupil, the "Venerable Bede," who was a monk in the monastery of Jarrow, was immensely indebted to them for the learning he acquired. The impulse given by his labors to Anglo-Saxon civilization are difficult to estimate. It is certain, however, that the valuable and extensive library he founded at Wearmouth imparted to the nation a taste for literature and learning, which bore excellent fruit for many centuries. His famous pupil, Bede, wrote his life.

**BENEDICT COLLEGE,** a co-educational institution for negroes at Columbia, S. C., conducted by the American Baptist Mission Society. It was founded in 1871 as Benedict Institute and chartered as a college in 1894. It has elementary, high school, collegiate and theological departments. All work on the campus is done by students, also all the work of the kitchen and dining-room. There are 13 buildings and the college has a permanent invested and productive endowment of $140,000. In 1916 it had 35 instructors and 700 enrolled students. The library contains 7,900 volumes.

**BENEDICTINE,** a liqueur originally prepared by the Benedictine monks of the abbey of Fécamp, in Normandy, consisting of spirit (fine brandy) containing an infusion of the juices of plants, and said to possess digestive, anti-spasmodic, and other virtues, and to have prophylactic efficacy in epidemics. It somewhat resembles chartreuse and has been made in the same way since 1510. See LIQUEUR.

**BENEDICTINES.** From the 6th to the 10th century almost all the monks in the West might be so called, because they followed the rule of Saint Benedict of Norcia. The rules which at that time the monasteries in Spain and France received from their bishops, as well as the rule of the Irish Saint Columba, were essentially the same as those of Saint Benedict; and in the progress of his order the monasteries in Spain and France, as well as those of the order of Columba, united themselves with it. Monte Cassino, the magnificent primitive monastery of the Benedictines, became the model of all others. At that time the monasteries, having no common superiors, were under the immediate control of the bishops in their respective dioceses, and differed from one another in many qualifications of the primitive rule. Not even the color of their dress was the same. The disciples of Columba wore white garments like the first Benedictine nuns, who originated in France in the 6th century. After the unions which took place at a later period, all the members of this order wore black, as the founder is said to have done. The decline of monastic discipline after the 8th century occasioned the reforms of Benedict of Aniana in France, the renewed inculcation of the old rule, and the adoption of new ordinances suited to the times, by the Council of Aix-la-Chapelle (817), as well as the particular rules and fraternities of the celebrated monasteries in France, Germany and England, which in those barbarous times became seats of civilization, and finally the institution of the Cluniacs, a new branch of the Benedictines, which proceeded from the convent of Clugny in Burgundy, founded in the year 910. The Benedictine monasteries, in the Middle Ages, were often asylums in which science took refuge and found protection. In place of the discordant and uncertain rules which had hitherto existed, the Cluniacs made fixed regulations concerning the hours of worship, the obedience, discipline and common government of all the monasteries belonging to their order, which were soon imitated in all Europe. In the 12th century their order contained 2,000 monasteries, whose luxury frequently called for reforms, and finally became the chief cause of their decline. The remains of the Cluniacs united themselves in the 17th century, under the patronage of Richelieu, with the Benedictine fraternities of Saint Vannes and Saint Maurus, the latter of which, founded in 1618, had in the beginning of the 18th century 180 abbeys and priories in France, and acquired by means of its learned members, such as Mabillon, Montfaucon and Martène, merited distinction. To this family belong those new orders established on the foundation and observing the rule of Saint Benedict, which have originated since the 11th century, and are distinguished from and proper Benedictines by their dress, names and particular regulations; for example, the Camaldulians, the monks of Vallombrosa, the Sylvestrians, the Grandimontenses, the Carthusians, the Cœlestines, the Cistercians and Bernardines, the Trappists and the monks of Fontevraud. The Benedictine monasteries never constituted one society, constitutionally regulated and governed under an aristocratical or monarchical form; on the contrary, a great many monasteries which descended from the old Benedictines were compelled by the Council of Trent to unite themselves gradually into particular fraternities. Among these the Benedictines of Monte Cassino, of Monte Vergine and Monte Oliveto (who called themselves *Olivetans*) in Italy and Sicily; those of Valladolid and Montserrat in Spain; those of Hirschau and Fulda in Germany, and that of Mölk in Austria, deserve particular notice on account of the extent of their possessions, the magnificence of their churches and the mildness of their rules. To the fraternity of Mölk (or Melk), which still exists, but accommodated to the spirit of the times, the rest of the Benedictine convents in Austria are joined. Many of the nunneries of this order are reserved for the nobility, because the places in them are equal to the most lucrative benefices. During the first French revolution the monasteries of the Benedictines along with all other monastic orders were abolished; but the Benedictines later partially re-established themselves in France. In England the Benedictines were an important body at the dissolution of the monasteries, having then 186 abbeys, priories and nunneries besides many smaller houses. At present there are eight Benedictine abbeys in England, besides an extensive establishment

at Fort Augustus in Scotland, comprising an abbey and college. In the United States there are 13 abbots, 545 priests, 133 clerics and 345 lay brothers in the order. The Benedictines have charge of 16 colleges in the United States.

**Bibliography.**— 'Annales Ordinis S. Benedicti'; 'Acta Sanctorum Ordinis S. Benedicti'; 'Bullarium Cassinense' (2 vols., Venice 1650); Dantier, 'Etudes sur les Bénédictins' (Paris 1864); id. 'Les monastères bénédictins de l'Italie' (ib. 1866); Gasquet, A., 'English Monastic Life' (London 1904); Reyner, 'Apostolatus Benedictinorum in Anglia' (Dovai 1626); Tassin, 'Histoire de la Congrégation de Saint-Maur' (Paris 1770); 'Cronica del Orden de San Benito' (7 vols., Salamanca 1609–15). Consult also the 'Diversarum Artium Schedula' by Theophilus (11th century); Pertz, 'Monumenta Germaniæ Historica'; Carlyle, 'Past and Present'; Montalembert, 'Monks of the West' (6 vols., English translation by A. Gasquet, London 1895); Taunton, 'English Black Monks of Saint Benedict' (ib. 1897); Digby, 'Ages of Faith.'

**BENEDICTION,** the act of blessing, of wishing to a person or thing the grace of God. It has always existed as a custom among Jews and Christians. The Jewish priests bestowed benedictions upon the people when they remained obedient to the law, and maledictions when they neglected it. In the Catholic Church the term is generally applied to the religious public service at which the priest makes the sign of the cross over the congregation with the ostensorium containing the consecrated Host. The Anglo-Saxon term «blessing» is now commonly used to express the benediction invoked with prayer, sign of the cross, and holy water upon religious articles such as prayer-books, holy pictures, rosary-beads, etc. In Protestant churches the benediction is usually given in words similar to those prescribed by Moses to Aaron. It is often accompanied with laying on of hands, especially in the celebration of marriages, the ordination of pastors, the confirmation of converts and the baptism of children.

**BENEDICTUS,** the song of Zacharias (Luke i, 68–79) used in the Roman breviary at lauds and also in the Anglican morning service.

**BENEFICE,** ben'e-fis (Lat. *beneficium*), an ecclesiastical living, originally including every species of preferment, as well as those to which dignities and offices were attached, namely, bishoprics, deaconries and prebends, as the lesser sort, namely, rectories, vicarages, perpetual curacies and endowed chaplaincies; but in its popular acceptation it includes only the latter class, and the distinction is recognized in recent acts of Parliament. A benefice now denotes the beneficial property right or usufruct enjoyed by the clerical incumbent ex officio, but without regard to his dignity. The name is derived from the *beneficium* of the Romans, a grant of any kind to a subject by the sovereign. It was afterward the designation of a grant of land by any large proprietor to a retainer or follower as a reward of services, being the same that later was denominated a fief or fee, the essential incident of which was perpetuity; that is to say, it was a permanent stipendiary estate held of a superior and usually subject to some condition indicating vassalage. The principle of the feudal tenure was applied, in the Middle Ages, to ecclesiastical benefices to this extent, that they were held of the Pope, as a superior lord, though these benefices had not the hereditary character of a fee, so far as respected the office or dignity connected therewith, and the lands or emoluments conferred by a grant were usually attached to such office or dignity, and on the death of the incumbent, reverted to the ecclesiastical superior who was entitled to appoint a successor. This, at all events, was the claim of the Popes, though it was the subject of contest between them and the principal European sovereigns. Consult Phillimore, 'Ecclesiastical Law of the Church of England' (2d ed., London 1895).

**BENEFIT OF CLERGY,** in English criminal law, the *privilegium clericale,* exemption of the clergy from penalties imposed by law for certain crimes. It was for many centuries an important element in the administration of criminal law and still is a curious and instructive part of the history of England. The origin of this privilege was a claim made by the ecclesiastics at an early period for the entire exemption of their order from the jurisdiction of the common-law courts. The only exception was the cleric being held in custody by the king himself; but, even in that case, he could only remain in such regal custody with the pleasure and consent of the bishop, who had entire control over his person and over the inquiry into his offense. If a priest or «clerk» happened to be imprisoned by the secular arm, on a criminal charge or capital felony, he was, on the bishop's demand, to be instantly delivered up without any further investigation, to be detained by the ordinary till he had either purged himself from the offense or, having failed to do so, had been degraded. This state of things continued till the Statute of Westminster the First, in 1275, which provided that the prisoner must first be indicted before he could be claimed; and then, in the reign of Henry VI, it was settled that the prisoner must first be convicted and might either then claim his clergy by plea declining the jurisdiction or, as was more usual, after conviction, by way of arresting judgment. The test of admission to this privilege was the clerical dress and tonsure. The statute Pro Clero (1350), however, extended it to all manner of clerks, and by later practice it was extended to all who could *read,* whether of the clergy or laity. Women, however, except professed nuns, were until the Reformation excluded. But laymen could claim it only *once,* and upon so doing were burned upon the hand and discharged, to be again tried by the bishop and, if acquitted by the latter, restored to their liberty, credit and property. By a series of statutes most of the serious crimes and all capital crimes had been excluded from benefit of clergy before the end of the 17th century, but it was extended to all persons convicted of clergyable offenses, whether they could read or not; and instead of burning on the hand, a discretionary power was given to the judge to inflict a pecuniary fine or imprisonment. The privilege was entirely abolished in England in 1827 (7 and 8 George IV, cap. 82). It had never

any legal existence in Scotland. In scattered instances the right was recognized in the colonies of Carolina and Virginia. An act of Congress passed 30 April 1790 provided that benefit of clergy shall not be allowed for any offenses punishable by death. It is now universally obsolete in English and American law. Consult Chitty, 'Criminal Law'; Desmond, 'The Church and the Law' (Chicago 1898); Pollock and Maitland, 'History of English Law' (Cambridge 1899); Flanagan, 'History of the Church in England, A.D. 1076' (London 1857); Stephen, 'History of Criminal Law.'

**BENEKE**, bā'nĕ-kĕ, **Friedrich Eduard**, German philosopher and psychologist: b. Berlin, 17 Feb. 1798; disappeared 1 March 1854; found drowned in a canal at Charlottenburg, 4 June 1856. After serving as a volunteer in the campaign of 1815, he studied theology and philosophy at Halle and Berlin, giving special attention to the English philosophers. In 1820 he lectured in the University of Berlin as a private teacher, but the continuance of his lectures was forbidden by the minister Altenstein, in 1822, on account of his departure from the philosophical principles of Hegel. He then taught for a few years in Göttingen, but, returning to Berlin in 1827, received permission to lecture in the university, in which he was elected extraordinary professor of philosophy after Hegel's death, in 1832. The starting point of his system is that philosophy must be founded upon a strict and careful examination of the phenomena of consciousness. He thus adopts, in mental philosophy, the method observed by Bacon in the natural sciences, and his system is described as an empirical psychology. He was opposed to the speculative system of Hegel and held that a true psychology, the basis of all knowledge, must be formulated along the methods of exact physical science, and he believed the genetic method to be superior to all others. He was a voluminous writer and among his chief works 'Erfahrungsseelenlehre, als Grundlage alles Wissens, in ihren Hauptzügen dargelegt' (1820); 'Neue Grundlegungen zur Metaphysik' (1822); 'Pragmatische Psychologie, oder Seelenlehre in der Anwendung auf das Leben' (1850); 'Psychologische Skizzen' (1827); 'Lehrbuch der Psychologie als Naturwissenschaft' (1833; 4th ed., 1877); 'Erziehungs und Unterrichtslehre' (2 vols., 1835-36; 4th ed., 1876); 'System der Logik als Kunstlehre des Denkens' (2 vols., 1842). Consult Brandt, 'Beneke, the Man and His Philosophy' (New York 1895); Kühn, C. H. T., 'Die Sittenlehre F. E. Benekes' (1892); Renner, H., 'Benekes Erkenntnistheorie' (Halle 1902); Wandschneider, A., 'Die Metaphysik Benekes' (Berlin 1903).

**BENEVENTO**, Italy, a province with an area of 680 square miles, and an archiepiscopal city. The surface of the province is hilly but the soil fertile in corn, fruit and pasture. Game is very abundant, and cattle, grain, wine, oranges and dead game are exported. Benevento was originally called Maleventum, but this was changed to Beneventum by the Romans when they founded a colony here after the defeat of Pyrrhus. Before it came into the hands of the Romans it belonged to the country of the Samnites. The Lombards in 571 made it a dukedom, which, long after the extinction of the Lombard kingdom, remained independent. At a later period it fell into the hands of the Saracens and Normans. The city, however, was not conquered by the latter because Henry III had given it to the Pope, Leo IX. In 1418 Benevento became part of Naples, but was given back to the Pope by Ferdinand I. In 1798 it was conquered by the French and handed over to Naples, and then in 1806 Napoleon made a present of it to his minister, Talleyrand, who received thence the title of Prince of Benevento. In 1815 it was restored to the Pope, and finally with Naples was annexed to the kingdom of Italy, in 1860. The city of Benevento is situated on a hill between the rivers Sabato and Calore, is 60 miles by rail from Naples but only 32 miles by direct route, is surrounded with a wall, has narrow dirty streets and some interesting buildings. Since 969 it has been the see of an archbishop. Few cities in Italy deserve so much attention on account of the antiquities which they contain as Benevento. Almost every wall consists of fragments of altars, sepulchres, columns and entablatures. Among other things, the well-preserved, magnificent triumphal arch of Trajan, built in 114, deserves particular mention. It is now called *Porta Aurea* (the golden gate), and is a gate of the city. The cathedral is a beautiful building in the Lombard-Saracenic style. This cathedral has a famous bronze door, with reliefs of New Testament scenes, said to have been executed at Constantinople in the 12th century. There are also several magnificent paintings. The city has also several palaces, a castle and numerous churches, including the circular Santa Sofia. In the public squares are Egyptian obelisks. Gold and silver plating, leather curing and parchment making are the principal industries. Pop. about 25,000.

**BENEVOLENCE**, a forced loan or contribution, by which the kings of England were wont, without any sanction from Parliament, to levy money from their subjects. Such benevolences had been denounced by Magna Charta, and even Richard III had allowed the only Parliament of his reign to enact a statute declaring them illegal, but they still continued under some shape or other till finally abolished by the Bill of Rights in 1689.

**BENEVOLENT ORDERS.** This term is applied in the statutes of many of the states to those societies whose objects are mainly good fellowship, combined with charitable relief or stipulated benefit of limited amounts in case of necessity, sickness or death, as distinguished from the fraternal orders or societies which afford a substantial death benefit, combined in some cases with sick relief and funeral benefit. Both classes of these orders employ the lodge system and have a representative form of government. The benevolent orders include the various bodies of Masons, the Odd Fellows, Knights of Pythias, Red Men, Elks, Foresters of America, Hibernians, Order of Eagles, United American Mechanics, Good Templars, Grand Army of the Republic and many others, the more important of which may be consulted under their individual titles.

**BENEZET, Anthony**, American Quaker philanthropist: b. Saint Quentin, France, 31 Jan. 1713; d. Philadelphia, 3 May 1784. His

family came to Philadelphia from London in 1731. He earnestly opposed the slave trade, advocated the emancipation and education of the colored population of the colonies and himself opened an evening school for negroes. Of his numerous tracts, distributed gratuitously, the most important are 'A Caution to Great Britain and Her Colonies, in a Short Representation of the Calamitous State of the Enslaved Negroes in the British Dominion' (1767); 'Historical Account of Guinea' (1772); 'A Short Account of the Society of Friends' (1780); 'Dissertation on the Christian Religion' (1782); 'Observations on the Indian Natives of this Continent' (1784).

**BENFEY**, bĕn'fi, **Theodor**, German Orientalist and comparative philologist: b. of Jewish parents, Nörlen, Hanover, 28 Jan. 1809; d. 26 June 1881. He studied in Göttingen, Munich, Frankfort and Heidelberg, devoting himself especially to classical and comparative philology. In 1862 he was appointed to the chair of Sanskrit and comparative philology in the University of Göttingen, which he held till his death. One of his earliest literary efforts was a translation of 'Terence' (Stuttgart 1837); after this, however, he turned his attention almost exclusively to comparative philology, Oriental languages, especially Sanskrit, and mythology. In his 50 years devoted, with rare enthusiasm and persistency, to linguistic studies, he did more than any other scholar to enlarge the boundaries of Sanskrit philology. In comparative philology, though an adherent of Bopp, he deviated from his master in deriving all Indo-European words from monosyllabic primitive verbs. This conception depends on his theory of the origin of stem suffixes. These, he holds, are almost all derived from a fundamental form, *ant*, which appears in the present participle of verbs. To support this view he assumes the most violent permutations of sounds, which set all phonetic laws at defiance. For his theory consult his 'Lexicon of Greek Roots' (1839); 'Short Sanskrit Grammar' (1868), and numerous essays. In Sanskrit he laid a foundation for the true study of the Veda by editing the 'Sâma Veda' (1848) with glossary and translation; and this work he continued by a scholarly translation of the first *mandala* of the Rig Veda in his magazine, *Orient and Occident* (1863-64). His Vedic grammar, for which he had been collecting materials for many years, was left unfinished. He also published a 'Complete Sanskrit Grammar, Crestomathy and Glossary' (1854), and a 'Sanskrit-English Dictionary' (1866). In comparative folk-lore his principal work is a translation of the 'Panchatantra' (1859). It is accompanied with elaborate notes, and the first volume consists entirely of an introduction in which he traces the course of these Indian stories in their wanderings and transformations both in eastern and western literatures.

**BENGA**, an African tribe, living on the Spanish island Corisco, off the western coast, having moved from the interior within a few generations. The American Presbyterian board of missions have christianized many of the Bengas and translated books into their language, which closely resembles the Kamerun and Dualla.

**BENGAL**, bĕn-gâl', India (Hind. *Bangālà*, Skt. *Vangalam*, from *Vanga*), a province of India, administered by a governor and reconstituted in 1905 and in 1912 from the former Bengal presidency and province, which included under its administration the native states of Bihar, Orissa and Chota Nagpur. As reconstructed the province of Bengal has an area of 78,700 square miles and a population (1911) of 45,500,000, mainly Hindus and Mohammedans. The native states were also reconstituted 1 April 1912 as the separate province of Bihar and Orissa, administered by a lieutenant-governor.

**Physical Features.**— The general physical character of Bengal, which occupies the northeast of India, is that of a practically level country, though it is surrounded with lofty chains of mountains. The northern part rests on the terraces of the Himalaya Mountains, the east is bounded by the Garos or Garrows chain and the west is ribbed with offsets of the Vindhya Mountains. It is intersected in all directions by rivers, the principal of which are the Ganges and Brahmaputra, whose annual inundations render the soil which they reach extremely fertile. In those tracts where this advantage is not enjoyed, the soil is thin, seldom exceeding a few inches in depth. The most inhospitable part of Bengal is what is called the Sunderbunds (from being covered with the soondru or sunder tree), that portion of the country through which the numerous branches of the Ganges seek the sea, or the deltaic space lying between the Hoogly River and Chittagong, about 150 miles from east to west and about 160 from north to south. This district is infested with tigers, is traversed in all directions by watercourses, or nullahs, and interspersed with numerous sheets of stagnant water called jheels, which abound with fish and waterfowl and are much resorted to by crocodiles.

**Geology and Minerals.**— In the northern part of Bengal, at the foot of the Himalayas, is a band of Tertiary formation; south from which, and along the course of the Ganges, more especially east from that river and including the greater part of its delta and that of the Brahmaputra, the country is wholly composed of alluvium or modern detritus. Calcutta stands upon strata of the transition series, which stretch west into Bihar, and are flanked north and south by tracts of crystalline formation. In the Garo Hills coal, iron and limestone are found, and nitre effloresces on the surface around Calcutta and elsewhere. Mineral springs are not numerous.

**Rivers.**— The principal rivers, besides the Ganges and Brahmaputra, the latter of which enters the province at its northeast extremity and falls into the Bay of Bengal near the principal embouchure of the Ganges, are the Soobunreka, which falls into the Bay of Bengal, in lat. 21° 35′ north, south-southwest of the Hoogly; the Cosi or Coosee, which rises near Khatamandu in Nepal and falls into the Ganges near Bhagalpur, in lat. 25° 20′ N.; and the Dumooda, which, rising in Bihar, falls into the Hoogly about 22 miles below Calcutta. There are numerous other streams of less note, mostly tributaries of the Ganges and Brahmaputra or their larger affluents.

**Climate.**— There is more regularity in the changes of the seasons in Bengal than perhaps in any other part of India; but it is subject to great extremes of heat, which, added to the humidity of its surface and the heavy dews that fall, render it generally unhealthy to Europeans. The prevalence of hot winds, which are sometimes loaded with sandy particles, is another source of disease. The seasons are distinguished by the terms hot, cold and rainy. The hot season continues from the beginning of March to the end of May, within which period the thermometer frequently rises to 100°, sometimes to 110°. The month of September is also often intensely hot, and when so is the most unhealthy period of the year to natives as well as Europeans, owing to the profuse exhalations from stagnant waters left by the inundations and from a rank decaying vegetation. The rainy season commences in June and lasts till October. During the first two months of this period the rain is frequently so heavy that five inches of water have fallen in one day, the annual average being from 70 to 80 inches. It is in this season that the inundations take place and that the Ganges overflows its delta, covering the land with its waters for more than 100 miles. The cold season, the most grateful and healthy of any to Europeans, continues from November to February, during which period north winds prevail, with a clear sky.

**Forests.**— In Bengal, as in India generally, great attention has been paid to the management of forests. Great destruction is caused among forests by fires, which are sometimes the result of accident but more frequently made purposely by the natives in pursuance of a system of jungle cultivation that appears to prevail throughout India. This consists in cutting down and burning a patch of forest and raising a crop in the open space, no plowing or digging being necessary. The next year this patch is abandoned and another treated in the same way. Another cause of destruction is the wastefulness of those who use the timber. The sunder-trees, for example, which furnish the best wood for the boats which are built in great numbers throughout eastern Bengal, have been cut down in so reckless a manner that the western parts of the Sunderbunds have already been to a large extent exhausted. In order to limit the destruction that goes on by such proceedings certain portions of the Indian forests are reserved and placed under the entire control of the government and additions are made to these reserves every year. Of the total 10,612 square miles of forest in Bengal in 1913, 4,871 were reserved, 1,711 protected and 4,030 unclassed.

**Animals.**— Among the wild animals are tigers, elephants, boars, bears, wolves, foxes, jackals, hyenas, leopards, panthers, lynxes, hares, deer, buffaloes, antelopes and monkeys. The most formidable of all these animals (and more so even than the lion) is the tiger, which here attains its utmost size and perhaps also its greatest ferocity. The domestic animals include native horses, thin, ill-shaped animals, and not well adapted for any kind of labor; cattle, of a very inferior breed, being extremely small and miserable looking; sheep, likewise of diminutive size, with very coarse, hairy wool, but when well fed their flesh is excellent. Hogs and goats are also plentiful, and buffaloes are domesticated for the sake of their milk. Reptiles are numerous and formidable, including gavials, a kind of crocodile, with which the larger rivers are infested; and among the serpent tribe, many of which are highly poisonous, the deadly cobra-de-capello. Turtles, frogs and lizards also abound, with swarms of mosquitoes. The turtles are chiefly procured from the island of Cheduba, in the Bay of Bengal. Fish are so exceedingly plentiful as to be within the reach of almost every class of inhabitants. Game, poultry and water-fowl of all descriptions abound in Bengal, particularly ducks, of which there is a great variety and most of them of a superior kind. The gigantic crane, commonly called the adjutant, from the stately air with which he struts about, frequents the towns in considerable numbers, performing the office of scavenger by clearing the streets of garbage, in consideration of which duty he enjoys an entire immunity from all disturbance; his principal food is offal, toads, lizards, serpents and insects. Crows, kites, sparrows and other small birds are numerous.

**Agriculture.**— The staple crop of Bengal is rice, which is cultivated so as to produce three harvests in the year — spring rice, autumn rice and winter rice. The last of these harvests is by far the most important. Besides sufficing for the wants of the population, the rice crop leaves a large surplus for exportation. Oil seeds are also largely cultivated, chiefly mustard, sesamum and linseed. The jute plant (*pât*) has long been cultivated, and in recent times the cultivation of it has greatly extended. It will grow on almost any description of land. Part of this crop is cultivated by those who use or manufacture it, almost all the Hindu farmers weaving cloth from it. It is now manufactured also in large mills under European management, and jute goods are now an export of some importance, though not nearly so much so as jute in the raw state for manufacture in Europe. The sunn plant, somewhat resembling the Spanish broom, is now quite extensively cultivated and exported to Great Britain, affording excellent material for both sails and cordage and being made into fishing nets by the natives. Cotton is grown over all India, but the best of the herbaceous kind is raised in Bengal and on the Coromandel coast; the finest grows on light, rocky soil. The cotton of India is generally inferior to that of the United States, but this is believed to be wholly owing to careless cultivation and to the slovenly manner in which it is prepared for the market. The cultivation of the date-palm and the manufacture of date sugar are carried on to a considerable extent, forming a profitable business for the cultivator. This kind of sugar forms an article of export. The sugar-cane is cultivated, but not nearly to such an extent as might be expected. There are two kinds of sugar-cane, a yellow hard cane, about the thickness of a finger; the other much thicker and deeply stained with purple. The latter is the most productive but the most troublesome to cultivate and therefore avoided by the more indolent farmers. Tobacco, which requires a light soil, is grown in three different situations — in rich spots of land contiguous to the farmer's house, in high land suitable for the

growth of sugar-cane and on the banks of rivers. The betel leaf, famous for its intoxicating quality and largely used over all India on that account, is cultivated in what is called a *voroj*, or fort, and is carefully protected from the sun and wind. Indigo being one of the principal articles of foreign commerce with Bengal, is extensively cultivated in that province. The opium production of Bengal was a government monopoly under Mohammedan rule and has been retained as such by the British. All the juice of the opium poppy must be sold to the government at a fixed price. This cultivation is carried on in the west of Bengal. Orchards of mango trees are to be found in every part of Bengal, the fruit being in general demand during the hot months. The cinchona tree and the tea plant have also been added to the agricultural products of Bengal.

**Manufactures.**— The principal manufacture of Bengal is that of cotton goods, including cotton piece-goods of various descriptions, calicoes, thread, and sail-cloth. Muslins of the most beautiful and delicate texture were formerly made at Dacca, a city in this province, but the manufacture is almost extinct.

The modern decay of the muslin manufacture of India has been owing in a great measure to the successful competition of Great Britain and to the circumstance of English fabrics being subject to no duty in Bengal, while high duties were levied on the fabrics of Bengal in Great Britain. These duties are now abolished. Large quantities of coarse cloth, manufactured from jute, are made in various districts of Bengal. Sericulture is carried on more largely in Bengal than in any other part of India, and silk-weaving is still a leading industry in many of the districts, but of late years there has been a serious decline. One branch of this industry, however, seems more flourishing than some others, namely, the cultivation of *tasar* or wild silk, the worm that produces it feeding upon the leaves of the sal and other forest trees. On the other hand, various new manufactures, carried on by machinery, are increasing. The most important of these are the industries connected with jute, cotton and sugar. These are already affording employment to many thousands and the natives show great aptitude for factory work.

**Commerce.**— The commerce of Bengal, both internal and external, is very large. Multitudes of native boats and other craft navigate the rivers. The imports to Calcutta from the interior have been valued at over $13,000,000, consisting of rice, tea, jute, indigo, linseed, mustard seed, wheat, etc. The foreign trade is large and increasing. Almost the whole of it passes through Calcutta, and the value of it annually is over $275,000,000, over $170,000,000 being exports. The most important exports are opium, jute, indigo, oil seeds, tea, hides and skins and rice; the chief import is cotton piece-goods. The foreign trade is chiefly with Great Britain, China, the Straits Settlements, France, the United States and Ceylon.

**History.**— The English first got a firm footing in Bengal about 1644 when, through the influence of an English medical man named Boughton, a favorite of the Emperor of Delhi, the East India Company obtained permission to locate themselves at Hugli or Hoogly, some 28 miles above Calcutta. In 1686 the company's factors, having had a rupture with the Moslem commander at the place where they were located, removed to Calcutta, then the village of Chuttanutty, where they continued to carry on their trade. In 1700 the viceroy of Bengal, being in want of money to dispute the succession to the Mogul throne, obtained a large sum from the company for the township on which their factory stood at Calcutta and some adjacent lands. Seven years afterward, namely, in 1707, Calcutta was erected into a presidency and the foundation of British power in India laid. For nearly half a century the company pursued a peaceful and profitable commerce, but at the expiration of that period, 1756, Calcutta was attacked and taken by the Soubahdar of Bengal, who threw the 147 Englishmen he found there in the notorious «black-hole» of Calcutta, where 123 of them perished in 11 hours. In the ensuing year Calcutta was retaken by Lord Clive — an event which was followed by a series of victories on the part of the British that terminated in the entire conquest of India. In consequence of unprecedented drought great scarcity of food prevailed in 1873 and 1874, but the prompt measures of the government were sufficient to prevent any widespread mortality. A bill conferring upon agricultural tenants a transferable interest in their holdings and protecting them against eviction was passed in 1885. For the purpose of more efficient administration, a preliminary partition and reconstitution of the presidency was effected in October 1905, not without considerable agitation and opposition on the part of the population. The present reconstitution into a province took effect in April 1912. For further general history and bibliography see INDIA.

**BENGAL, Bay of,** that portion of the Indian Ocean between Hindustan and Farther India, or Burma, Siam and Malacca and extending south to Ceylon and Sumatra. It receives the waters of the Ganges, Brahmaputra, Irrawadi, Mahanadi, Godavari, Krishna and Kaveri. Calcutta, Rangoon and Madras are the most important towns on or near its coasts. On the west coast there are no good harbors, but the east coast has a considerable number, among them being Akyab, Cheduba, Negrais, Mataban and Syriam. On account of the extreme heat the rate of evaporation is very high, sometimes amounting to an inch per day. The tide sometimes rises to the height of 70 feet. In summer the northeast monsoon prevails, and in winter the southwest monsoon. The Andaman and Nicobar islands are situated in the eastern part of the bay.

**BENGAL,** or **BENGOLA, Light,** a firework, giving a vivid and substained variant light. It is used for signals at sea. It is composed of six parts of nitre, two of sulphur and one of antimony tersulphide. These are finely pulverized and incorporated together and the composition pressed into earthen bowls or similar shallow vessels. It is also used in ordinary pyrotechny to illuminate a district or section of country. Because of a poisonous oxide of antimony given off during combustion the light cannot be used without danger indoors.

**BENGALI,** bĕn-gä'lę, the dealer's name, originating in a mistake as to their origin, for

any of several of the beautiful little African waxbills, bred and sold as cage-birds; especially the "blue-bellied finch" (*Estrilda bengala*), which is ashy-brown above, with the wing quills brown, and the sides of the head, the throat and whole lower surface azure blue, spotted under and near the wings. They add to this charming dress lively manners and an agreeable song. Their requirements in the cage are like those of a canary. They are common also in Australia and Oceanica.

**BENGALI ERA, The**, one of the chronological eras of the Hindus, supposed to have been derived from the Hegira. The Hindus, however, use the sidereal year and the Mohammedans the lunar, hence the Mohammedan epoch is at present some nine years in advance of the Bengali.

**BENGALI, or GAURA, LANGUAGE**, one of the five modern languages of Hindustan, which are derived from the ancient Sanskrit. Its name is derived from Banga, the Sanskrit name of the country, with the Arabic article *al* suffixed; the whole being corrupted into the present form. Gaura is derived from Gaur, the name of the ancient metropolis; it is spoken by 44,624,048 British subjects, of whom about one-fourth speak also some other dialect. It extends over the regions on the lower Ganges, from Patna down to its delta, being purest in the province of Bengal and in the eastern regions. This language consists of an aboriginal basis, with which a much greater portion of Sanskrit and Pracrit has been admixed than with any one of its cognates; with a considerable addition of Afghan, Persian, Arabic, Portuguese, Malay and English words. Although the Sanskrit element predominates as regards the words, the grammatical forms of the language differ more from the Sanskrit than the forms of the Greek, Latin, Gothic and Persian; most of the flexions of nouns and verbs having been lost, and their places being supplied by auxiliary words and by circumlocution. Notwithstanding this, it admits in the higher style many of those forms which are intelligible only to more cultivated persons. There are no forms of gender, sex being denoted by the use of qualifying terms or by different words. There are seven cases made by suffixes — nominative, accusative, instrumental, dative, ablative, genitive and vocative. The plural of nouns is made by suffixing *dig* to the genitive singular. It delights in compound words, formed especially by means of a sort of past participle; elegant Sanskrit compounds being unidiomatic. There is but one conjugation, whose radical is the imperative. Compound tenses are made by the auxiliaries, meaning to do, to be, to become. The singular and plural of verbs are often confounded; the plural with a singular noun denoting respect, the singular with the plural noun being used in speaking to inferiors. There are three simple moods, infinitive, indicative, imperative; four others being periphrastic, the potential, optative, inchoative and frequentative. Any verb is conjugable negatively by the suffix *nā*. The system of writing is that of the *dêvanāgari* of the Sanskrit language but the forms of letters are more broken and twisted. B and v, however, are written by one character, and the characters of the sounds, s, z, sh, are interchangeable.

No book written in Bengali appeared before 1500 A.D. After the settlement of Moslems in Gaur, the Voisyas and Soodras (agricultural and servile castes) began to study Persian, to gain a livelihood, and were well rewarded by the conquerors. Except the stories of Krishna's study, the rules of arithmetic in verse and a few other elementary books, the vernacular literature was very poor, until Rajah Krishnachandra Roy Bahadoor restored Hindoo literature in India, by bringing in pundits and endowing schools. Owing to the abundance of Sanskrit books, and the prejudice of most Brahmins against the Bengali, this was neglected until 1800, when the college of Fort William was founded, and the study of Bengali was made imperative and collateral to the Sanskrit. Many Bengali works have since been printed at Calcutta and Serampore. The first native newspaper was published at Serampore in 1818. Considerable change has been made since in the diction and composition of this language, which continues to be enlarged and ennobled, by being capable of borrowing indefinitely from the venerable Sanskrit mother. In 1913 the Bengali poet Sir Rabindra Nath Tagore received the Nobel prize in literature. Gilchrist, H. P. Forster, Carey, W. Morton, Hunter, Mohun Persaud, Tahur, Tarachand Chukruburti and Sir G. C. Haughton have published Bengali English dictionaries and vocabularies, and Ram Comul Sen has translated Todd's edition of Johnson's English dictionary into Bengali.

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**BENGAZI**, bĕn-gā'zę, or **BENGHAZI**, north Africa town, capital of the vilayet Barca, on the east coast of the Gulf of Sidrah. Next to Tripoli it is the most important seaport on this coast. The harbor is fast silting up, and admits only small vessels; but there is still a considerable trade, cattle, corn, barley, sponges, ivory, ostrich feathers, etc., being exported, especially to Malta. It is the centre of a fertile region and has a large trade with the interior by means of caravans. The population, between 25,000 and 35,000, is composed of Maltese, Greeks and Italians. It is sometimes identified as the ancient Hesperides, which was named Berenice by Ptolemy III. It was occupied by the Italians 20 Oct. 1911, and was the scene of several skirmishes during the war with Turkey.

**BENGEL, Johann Albrecht**, German theologian and philologist: b. Winnenden, Würtemberg, 24 June 1687; d. Alpirsbach, 2 Nov. 1752. He studied at Stuttgart and Tübingen, and became curate of Metzingen. In 1708 he was appointed tutor in theology at Tübingen. Among other high offices filled by him

later in life were those of consistorial councillor and prelate of Alpirsbach. He especially applied himself to the critical study of the Greek Testament, of which he published an edition in 1723. Among his other works are 'Apparatus Criticus Novi Testamenti,' a work of great value for its suggestive condensed comments, which first appeared in 1742, and has been several times reprinted, etc. An attempt has been made to adapt his 'Gnomon' to English readers in the 'Critical English Testament,' by Blackley and Hawes (1866). Bengel was the first Protestant author to treat New Testament exegesis in thoroughly critical style. He also rendered invaluable service in amending the text of the Bible and in pointing the way to the classification of the biblical codices into families. The notes appended to his 'Gnomon N. Testamenti' (Tübingen 1742) have been highly regarded and translated into nearly all modern tongues (English ed., Philadelphia 1862). They were used by John Wesley in his 'Notes on the New Testament.' Other works of Bengel are 'Erklärte Offenbarung Johannis' (Stuttgart 1740) and 'Ordo Temporum a Principio per Periodos Œconomiæ Divinæ Historicus atque Propheticus' (Tübingen 1741). Consult the biography by H. P. Burke (Stuttgart 1831, English trans., London 1837), and Oscar von Wächter, 'Bengel, Lebensabriss' (Stuttgart 1865).

**BENCKENDORFF, Alexander,** COUNT, Russian diplomat: b. 1849; d. London, Jan. 1917. The son of Constantin Count Benckendorff and Louise Princess de Croy-Dülmen; he was reared in the Roman Catholic faith and educated in France and Germany. Entering the diplomatic service in 1869 he acted as attaché to the Russian embassies at Rome and Vienna, and minister to Denmark from 1897 to 1903. In the latter year he became ambassador to Great Britain, and occupied that post till his death. He married Sophie Countess Shuvaloff in 1879; his only daughter was married in 1911 to the Hon. Jasper Ridley, second son of the first Viscount Ridley. Count Benckendorff may be held in a very large measure responsible for the reconciliation between Russia and Great Britain after many years of mutually suspicious animosity. It was he who negotiated the Anglo-Russian Agreement of 1907, which, following on the Anglo-French Agreement of 1904, finally resulted in the Triple Entente.

**BENGER, Elizabeth Ogilvy,** English historical writer: b. Wells, Somersetshire, 1778; d. London, 9 Jan. 1827. She early displayed a turn for literature, but her straitened means preventing her from gratifying this taste by the purchase of books, she was in the habit of perusing the opened books in a bookseller's window, and would return day after day to see if the page had been turned over. In 1802 she removed with her mother to London. Her first literary attempts, including a poem on the abolition of the slave trade and two novels, attracted little attention, but she was more successful with her 'Memoirs of Mary Queen of Scots,' and of 'Elizabeth Queen of Bohemia.' She also wrote the Lives of Anne Boleyn, Mrs. Elizabeth Hamilton and John Tobin, the dramatist. Her chief merits are a clear style and industry in the collection and arrangements of facts.

**BENGOUGH,** bĕn'gō, **John Wilson,** Canadian poet: b. Toronto, 5 April 1851. In 1873 he established the *Grip*, a humorous weekly, in Toronto. His political cartoons in this paper were highly artistic. He is also widely known as a lecturer and a poet. His publications include 'Ontario, Ontario' (a famous election song); 'Grip's Cartoons' (1875); 'Popular Readings, Original and Selected' (1882); 'Caricature History of Canadian Politics' (1886); 'Motley: Verses Grave and Gay' (1895); 'The Up to Date Primer: A First Book of Lessons for Little Political Economists' (1896); 'The Gin Mill Primer' (1898); 'In Many Keys' (poems 1902), etc.

**BENGUELA,** bĕn-gā'lą, or **BENGUELLA,** a district belonging to the Portuguese on the western coast of south Africa, forming one of the three provinces of Angola; bounded north by the province of Loanda, south by that of Mossamedes and west by the Atlantic Ocean. The interior of the country is mountainous, the direction of the elevated lands being from northeast to southwest. It is well watered, being intersected by numerous rivers and streams. Its vegetation is luxuriant and it possesses extensive forests. Its products are those of tropical Africa generally. Tobacco, fruit and vegetables are grown. Coffee grows wild. The soil in parts is well adapted for the production of grain, but little is grown. The larger animals of Africa are numerous, such as lions, elephants and hippopotami. The minerals include copper, sulphur, lead, gold and silver. The only town worth mention is the seaport, Benguela, founded in 1617 as San Felipe de Benguela, which is pleasantly situated and fairly healthy. In slave-trading days Benguela's population was greater than it is to-day and it was an important centre of the trade. It has rail connection with Lobito, which has a good harbor with improved docking facilities. It exports rubber, coffee, skins, ivory, etc. A short railway starts from the town, the population of which is about 3,600, of which between 1,000 and 1,500 are whites. The population of the province may amount to several millions.

**BENHADAD,** the name of three kings of Syria, all mentioned in Scripture. The most conspicuous is the second, who was equally remarkable for his arrogance in prosperity and his craven spirit in adversity. He first sent an insolent message to Ahab, claiming him and all his subjects as his slaves; and after Ahab encountered and defeated him, Benhadad sent a message abjectly begging his life. Ahab was impolitic enough to grant it, and Benhadad, disregarding all his promises, proved a bitter enemy to his successor. He was murdered about 890 B.C.

**BENHAM, Andrew Ellicott Kennedy,** American naval officer: b. New York, 10 April 1832; d. at Lake Mahopac, N. Y., 11 Aug. 1905. He entered the navy in 1847; served in the East India and the home squadrons in 1847–52; attended the United States Naval Academy 1852–53; was commissioned lieutenant in 1855, lieutenant-commander in 1862, commander 1866, captain 1875, commodore 1885

and rear-admiral in 1890, and retired in 1894. During the Civil War he served in the South Atlantic and West Gulf blockading squadrons, taking part in the capture of Port Royal, S. C. In 1868–69 he served at the Brooklyn navy yard; was lighthouse inspector 1870–71 and 1884–88. In April 1893 he commanded one of the divisions in the great naval display at New York; in 1894, as commander of a squadron at Rio de Janeiro, Brazil, he forced the commander of the insurgents' squadron to raise the blockade of the city and to discontinue firing on American merchant vessels; and in 1898 was naval prize commissioner in Savannah, Ga.

**BENHAM, Henry Washington,** American military engineer: b. Cheshire, Conn., 1816; d. 1 June 1884. He was graduated at the United States Military Academy in 1837 and became brevet major-general, United States army. He commanded the engineer brigade and laid several pontoon bridges under fire during the Chancellorsville battles; constructed and commanded the defenses at City Point, devised the picket shovel and made many improvements in the construction of pontoon bridges, in which he was a recognized expert. After the war he was in charge of the Boston harbor sea wall and later of the New York harbor defenses; retired from active service 1882.

**BENHAM, William,** English clergyman and author: b. West Meon, Hampshire, 15 Jan. 1831; d. 30 July 1910. He was vicar of Addington, 1867–73; of Margate, 1872–80; of Marden, 1880–82; and rector of Saint Edmund's, Lombard street, London, from the year last named. He was canon of Canterbury from 1885. He published among other works 'The Church of the Patriarchs' (1867); 'Catherine and Craufurd Tait; 'Annals of the Diocese of Winchester' (1884); 'A Short History of the Episcopal Church in the United States' (1884); 'The Dictionary of Religion' (1887); 'Life of Archbishop Tait,' with Davidson (1891), and histories of the cathedrals of Winchester, Rochester and old Saint Paul's, London. He edited the 'Ancient and Modern Library of Theological Literature.'

**BENI,** bā'nę, Bolivia, one of the nine departments of Bolivia, South America. It is in the northeastern part and bounded on the north and east by Brazil, by the departments of Cochamba, La Paz and Santa Cruz on the south and La Paz on the west, with an area of 107,744 square miles. It is a level, fertile region, growing cocoa, coffee, sugar-cane and tobacco, tropical fruits and containing vast forests of rubber-trees and rich deposits of gold. The climate is hot and moist, but is healthful, nevertheless. Pop. 37,300, mostly Indians. Trinidad (4,810) is the chief town of the department.

**BENI,** a river of South America, formed by the junction of several streams flowing eastward from the Andes in about 18° south. Its course is north and northeast through Bolivia; and on the border of Brazil it unites with the Mamoré to form the Madeira, by which its waters are carried to the Amazon. It receives several tributaries of importance, the chief being the Madre de Dios from Peru, and it is navigable throughout a great part of its course. Its length is about 850 miles.

**BENI-HASSAN,** bā'nę-häs'sąn, Egypt, village on the east bank of the Nile below Assiut, remarkable for the rock-hewn tombs in the neighborhood, 39 in number, cut in the calcareous stone of the mountain. They are sepulchres of the ancient monarchs who ruled the district about 2000 B.C. They exhibit interesting paintings and hieroglyphics. The paintings portray incidents in the ancient life of Egypt and the inscriptions are of great value for the light they throw upon the history of the 12th dynasty. In recent years the mural decorations have suffered at the hands of relic-hunters. The remainder have been carefully copied at the direction of the Egypt Exploration Fund. Consult 'Publications of the Archæological Survey of Egypt' (Vols. I, II, V, 1892, 1893–96).

**BENI-ISRAEL,** bā'nę-iz'ră-ĕl, a race in the west of India (the Konkan sea board, Bombay, etc.), who keep a tradition of Jewish origin and whose religion is a modified Judaism. By some persons they are supposed to be a remnant of the 10 tribes. Their number is estimated at 5,000 and in feature they resemble the Jews of Arabia. They abstain from the flesh of unclean animals and observe the Sabbath strictly. Some of their learned doctors are acquainted with Hebrew, but to the vast majority the Scriptures are unknown. They observe several of the religious customs common among their neighbors the Hindus. Little is known as to the time of their settlement in India, but it is certain that they had been there for many centuries when, in 1000 A.D., the reformer David Rahabi came among them. Benjamin Tudela knew them in the 12th century and Marco Polo in the 13th. Their communities are governed by the *Mukadam,* or head man, and their religious chiefs are called *cadi.* The latter perform circumcision and other rites. Consult Ezekiel, Joseph, in 'The Jewish Encyclopædia' (1902) and Samuel, H., 'Sketch of Beni-Israel' (1889).

**BENI-ISRAEL,** a small antelope (*Neotragus saltianus*) closely allied to the duykerboks, common in Abyssinia and on the shores of the Red Sea. It is known by the names omdigdig, madoqua, hegolch and Salt's antelope. It is a related species of the Neotragus Kirki, or Kirk's antelope, of southern Abyssinia, which is very numerous. They utter shrill cries and travel by long bounds. Their flesh has a heavy, unpleasant flavor.

**BENI-KHAIBIR,** bā-nĭ-kā-ī'bẽr (sons of Keber), an Arabic tribe supposed to be a remnant of the ascetic tribe of Rechabites.

**BENI-MZÂB,** a race or tribe of Berbers that dwell in the Sahara, near its northern border, under the supremacy of the French. They number some 30,000. They are peacefully disposed, and numbers of them are employed in Algiers in various occupations. In 1882 their territory was finally annexed to the department of Algiers and a special bureau was established at Ghardaia. Consult Coyne, A., 'Le Mzab' (Algiers 1879).

**BENI-SUEF,** bā'nę-swăf', Egypt, the capital of a province of the same name; is pleas-

antly situated on the left bank of the Nile, 65 miles south from Cairo, with which it is connected by railway. It is the entrepôt for the produce of the fertile valley of Fayoum, and contains cotton mills, controlled by the state, and alabaster quarries. Pop. (1907) 23,357. The province has an area of 400 square miles and a population estimated at 370,000.

**BENICARLO**, bā-nę-kär-lō′, Spain, seaport in Valencia, in the province of Castellón de la Plana, at the mouth of the Benicarló River, on the Mediterranean, 42 miles northeast of Castellón de la Plana. It is surrounded with walls, having an old castle, a fine church, with an octagonal tower, and some manufactures, etc. It is chiefly noted as being the place of export of the red wines called by its name which are produced in the surrounding country. These are chiefly sent to Bordeaux to be mixed with clarets, or to England to be manufactured into port. Grain, oil, vegetables and oranges are produced, and spirits are manufactured. Pop. (1910) 7,200.

**BENICIA**, bĕn-ish′i-ȧ, Cal., city in Solano County, at the mouth of the Sacramento and San Joaquin rivers, and on the Southern Pacific Railroad, 24 miles northeast of San Francisco. The harbor is good and there is steamship communication with San Francisco. The city has among its principal industries creameries, tanneries, farm implement works, shipyards and fruit packing establishments. It received its charter as a city in 1861. Its government is vested in five trustees elected for a term of four years. It contains a United States arsenal and barracks; Saint Augustine College (Roman Catholic); Saint Catherine's Convent (Roman Catholic). Benicia was founded in 1848 and in its early years rivalled San Francisco. In 1853 it was the capital, but the government seat was transferred to Sacramento in 1854. Pop. 3,100.

**BENIGNI**, bĕn-īn′yē, **Umberto**, Italian clergyman and educator: b. Perugia, 30 March 1862. He was educated at the seminary of his native city, the School of Palæography and Diplomacy and State Archives, Rome. In 1880–93 he was successively secretary to the archbishop of Perugia, professor of Church history at the seminary there and founder of the *Rassegna sociale*, the first Italian periodical devoted to Catholic sociology. After 1895 he resided in Rome, where he edited the *Bessarione* and *Voce della Verita*. He was also professor of Church history at Saint Apollinaris, the Propaganda and the Vatican Seminary. He was assistant at the Vatican Library and member of the Historico-liturgical Commission of the Congregation of Rites. He is at present professor of Church history and diplomatic forms at the Pontifical College for noble ecclesiastics. He has written 'Propædeutica historiæ ecclesiasticæ' (2 vols.) and 'Storia sociale della Chiesa' (2 vols.). He contributed upwards of 400 articles to the 'Catholic Encyclopedia.'

**BENIN**, bē-nīn′, Africa, a negro country or kingdom, on the Bight of Benin, Gulf of Guinea, extending along the coast on both sides of the Benin River, and to some distance inland, but the limits are not accurately known. The capital is Benin, a town which at one time had some 15,000 inhabitants, but is now said to have greatly decreased in population. It is situated about 50 miles from the coast, and consists of clay-built houses neatly thatched with reeds, straw or leaves. The coast, which now belongs to the British, is thickly indented with estuaries, some of them of considerable breadth and studded with islands. The country is flat for some distance inland, when it begins gradually to rise till it attains a height of over 2,000 feet. It is very well wooded, and being likewise well watered, it is rich in all the vegetable productions of the tropics. Cotton is indigenous and is woven into cloth for the women. Sugar-cane of good quality is grown; and yams, plantains, maize, rice, etc., are cultivated. The religion is Fetishism. The climate, especially at the mouth of the rivers, is very unhealthy. Palm oil is now the principal article of commerce. The inhabitants are still in almost the savage state, human sacrifices being offered in recent times. It is believed that the Portuguese, Diogo Carn, discovered Benin in 1484. It was long the centre of the slave trade, which the British suppressed when their influence became paramount there. A massacre of British officials and other Europeans took place in 1897 and a punitive expedition was sent to take the city, which with the surrounding district now forms part of the southern Nigeria. Government authority is vested in a British resident assisted by a council of native chiefs. Consult Roth, 'Notes on Benin Customs' (1898) and 'Great Benin' (1903).

**BENIN, Bight of**, Africa, a large bay on the west coast, forming a portion of the Gulf of Guinea, and extending from the Niger delta westward to Cape Saint Paul, a distance along the coast of 500 miles. The Forcadas River, flowing into the bight, forms the principal water route between the ocean and the Niger above the Delta.

**BENIOWSKY**, bā-nē-ŏff′skĭ, **Moritz August von**, Hungarian adventurer: b. Verbova, Hungary, 1741; d. 23 May 1786. The son of an Austrian general, he served as lieutenant in the Seven Years' War and in the Polish war against Russia. In 1769 he fell into the hands of the Russians, who exiled him to Kamchatka. Availing himself of a knowledge of navigation, he succeeded in saving from wreck the vessel which was to convey him to Siberia. This feat won for him the sympathy of the governor of Kamchatka, which was still more strengthened by his proficiency in chess, and he appointed him tutor of his children. One of his pupils fell in love with him, and with her father's consent they were married. In 1771 he effected his escape from Kamchatka with the assistance of his wife, who, although she had since learned that he had another wife in Hungary, followed him to Formosa and Moscow, at which latter place she died. On his return to Paris he undertook to found a French colony at Madagascar, where he arrived in June 1774, founded his colony, and in 1775 was proclaimed king by some of the native tribes, while his wife was proclaimed queen. The governor of the Isle of France refusing to supply him with men to support his state, Beniowsky applied directly to the French government, but without success. Disgusted with the French and their colonies

he now entered the Austrian service, and was commander in the battle of Habelschwerdt, in 1778 against the Prussians. His subsequent efforts to interest the English government for Madagascar were fruitless, but with the support of a wealthy firm of Baltimore, Md., he effected a landing in Madagascar, but was killed soon after in a conflict with troops from the Isle of France. He wrote his autobiography in French; it was translated into German by George Forster, into English by William Nicholson and into various other languages. Kotzebue dramatized his character and career in his play entitled 'The Conspiracy in Kamchatka.' The 'Memoirs and Travels,' edited by Nicholson and Magelhan, were published in London in 1790. Another edition was prepared by Kubalski (Paris 1863).

**BENISH' DAYS**, days (Mondays, Wednesdays and Saturdays) on which the modern Egyptians don the *benish* (whence the name), or ordinary garment, relax their religious duties and engage in pleasures.

**BENJAMIN**, the youngest son of Jacob and Rachel (Gen. xxxv, 16–18). Rachel died immediately after he was born and with her last breath named him Ben-oni, "son of my sorrow"; but Jacob called him Benjamin, "son of my right hand." He was a great comfort to his father, who saw in him the image of the wife he had buried, and of Joseph, whose loss he also mourned. He could hardly be persuaded to let him go with his brethren to Egypt. When Jacob migrated to Egypt Benjamin appears at the head of the family of 10. The territory of the tribe in Palestine was between those of Ephraim and Judah and included the cities of Bethel, Jericho, Gibeon, Ophrah and Ramah. The tribe was one of the most warlike and holds an important place in Hebrew history. The tribe of Benjamin, small at first, was almost exterminated in the days of the Judges, but later it greatly increased. On the revolt of the 10 tribes Benjamin adhered to the camp of Judah; and the two tribes afterward closely united. King Saul and Saul of Tarsus were Benjamites; also Esther and Mordecai. Some scholars regard the tribe as being formerly a constituent part of the tribe of Joseph. See JEWS AND JUDAISM.

**BENJAMIN, Asher**, author of the first American books on architecture, who lived about the close of the 18th century. Little is known of his life except that he followed his profession as architect and builder in Massachusetts. He was the author of 'The Elements of Architecture, Town and Country Builder's Assistant' (1797) and 'The Practical House Carpenter.'

**BENJAMIN, Charles Henry**, engineer and educator: b. Patten, Me., 29 Aug. 1856. He was graduated at the University of Maine in 1878. Degrees, M.E., University of Maine; D.Eng., Case School of Applied Science. From 1880 to 1886, professor of mechanical engineering at the University of Maine; 1889–1907, professor of mechanical engineering, Case School of Applied Science; since 1907, dean of the Schools of Engineering, Purdue University. Principal publications, 'American Machine Tools' (1906); 'Steam Engine' (1909); 'Machine Design' in collaboration with J. H. Hoffman (1906) also papers and monographs on engineering subjects in various technical journals and proceedings of engineering societies; member, Tau Beta Pi and Sigma Xi; honorary member of the Cleveland Engineering Society; member of the American Society of Mechanical Engineers, Master Mechanics' Association, Master Car Builders' Association, Western Railway Club, Society for the Promotion of Engineering Education.

**BENJAMIN, Judah Philip**, American lawyer and statesman: b. Saint Croix, West Indies, 11 Aug. 1811; d. Paris, 7 May 1884; of English parentage and of Jewish faith. He was educated at Yale College and was admitted to the bar in New Orleans in 1832. He had an extensive practice in New Orleans, was engaged as counsel in several cases of nation-wide interest and published a valuable 'Digest of Reported Decisions of the Supreme Court of the Late Territory of Orleans and of the Supreme Court of Louisiana.' In 1848 he was admitted to practice before the United States Supreme Court and was elected to the United States Senate in 1852 and 1858. At the beginning of the Civil War he resigned from the Senate and declared his adhesion to the State of Louisiana. In 1861 he accepted the office of Attorney-General in the Cabinet of Jefferson Davis, and afterward became successively Confederate Secretary of War and Secretary of State. He served with great energy and ability in the latter capacity until the close of the war. After Lee's surrender, Benjamin fled from Richmond and after many hardships succeeded in reaching London, England, where he was admitted to the bar in 1866. He gained a successful practice, and in 1872 was formally presented with a silk gown. He wrote a 'Treatise on the Law of Sale of Personal Property' (1868), which became a legal classic in England. He retired in 1883. Consult Butler, Pierce, 'Judah P. Benjamin' (Philadelphia 1907).

**BENJAMIN, Lewis S.** (LEWIS MELVILLE), English writer: b. London, 30 March 1874. He was on the stage from 1896–1901, afterward taking up literature as his profession, and specializing in the Georgian and Early Victorian periods. He has written a 'Life of Thackeray' (1909), and edited an edition of his works (1901–07). His other works include 'Victorian Novelists' (1906); 'The First Gentleman in Europe' (1906); 'The Beaux of the Regency' (1908); 'Life and Letters of Lawrence Sterne' (1911); 'William Cobbett' (1913); 'Memoirs of Lady Craven' (1913); 'The Berry Papers' (1914).

**BENJAMIN, Marcus**, American editor: b. San Francisco, Cal., 17 Jan. 1857. He studied at the School of Mines, Columbia University, in 1878; received the A.M. degree from Lafayette College in 1888; Ph.D. University of Nashville, 1889; Sc.D. University of Pittsburgh, 1905; LL.D. Saint John's College, Maryland, 1910. He became editor of the *American Pharmacist* in 1882, and later of its successor, the *Weekly Drug News*. He has edited more than 100 volumes in connection with his special duties as editor of the United States National Museum since 1 April 1896, and as member of the United States Assay Commission 1896, 1900, 1904, 1906 and 1912. He contributed vari-

ous articles to Appleton's 'Annual Cyclopedia,' 1883 to 1902; was on the staff of Appleton's 'Cyclopedia of American Biography'; was editor of various Appleton's guides and handbooks, etc., also of 'Standard Dictionary,' 'Universal Cyclopedia,' 'Encyclopedic Dictionary,' 'American Educator,' 'International Year Book,' 'New International Cyclopedia'; was editor-in-chief of Appleton's 'New Practical Cyclopedia' (6 vols., 1910); was translator of Bertholet's 'Explosive Materials' (1883). He was secretary (1904–07) and registrar (1914–15) of the society of the Sons of the Revolution, and president of the Alumni Association of Columbia University in the District of Columbia, 1909–15. He has contributed various articles to the principal magazines.

**BENJAMIN, Park,** American journalist, poet and lecturer: b. Demerara, British Guiana, 14 Aug. 1809; d. New York, 12 Sept. 1864. Early in life he was sent to New England and was educated at Trinity College, Hartford. He studied law, but later took up literary work, helping to found *The New World* in New York in 1840. His poems, of a high order of merit, have never been collected. 'The Contemplation of Nature,' read on taking his degree at Hartford, 1829; the satires, 'Poetry' (1843); 'Infatuation' (1849); 'The Nautilus'; 'To One Beloved'; and 'The Old Sexton' are among his works. He was associated editorially with Epes Sargent and Rufus W. Griswold. 'The Old Sexton' has found its way into several anthologies.

**BENJAMIN, Park,** American lawyer, editor and miscellaneous writer: b. New York, 11 May 1849. A graduate of the United States Naval Academy (1867), he served on Admiral Farragut's flagship, but resigned in 1869, and was graduated at the Albany Law School in the following year. As a lawyer he has been a patent expert. He edited the *Scientific American* (1872–78), and Appleton's *Cyclopædia of Applied Mechanics* and *Cyclopedia of Modern Mechanism*. He has written 'Shakings: Etchings from the Naval Academy' (1867); 'Wrinkles and Recipes' (1875); 'The End of New York' (1881); 'The Voltaic Cell' (1892); 'Modern Mechanism' (1905); 'The Age of Electricity' (1886); 'The Intellectual Rise in Electricity, a History'; 'The United States Naval Academy' (1900).

**BENJAMIN, Samuel Green Wheeler,** American traveler, artist and miscellaneous writer: b. Argos, Greece, 13 Feb. 1837; d. Burlington, Vt., 19 July 1914. He was educated at Williams College and at the English College in Smyrna; was assistant librarian in the New York State Library, 1861–64; and was United States Minister to Persia, 1883–85. He was also editor of the *American Magazine of Art* and was a frequent contributor to magazines and periodicals. He was also favorably known as a marine painter and illustrator. Among his numerous works, both in prose and verse, are 'Art in America' (1879); 'Contemporary Art in Europe' (1877); 'Constantinople' (1860); 'Troy: Its Legend, Literature and Topography' (1881); 'A Group of Etchers' (1883); 'Persia and the Persians' (1886); 'Sea Spray' (1888).

**BENJAMIN-CONSTANT,** bŏn-zha-măn-kŏn-stŏn, **Jean Joseph,** French painter: b. Paris, 10 June 1845; d. there, 26 May 1902. He studied under Cabanel, and exhibited in the Salon of 1869 a scene from 'Hamlet.' His taste inclined him to Oriental subjects and the nude, and his vivid coloring and dramatic treatment made his work fashionable in Paris, London and the United States. His work displays much finished and minute detail, but he paid chief attention to harmony of effect and decorative value. The most celebrated of his pictures are 'The Last Rebel' (1870); 'Mohammed II's Entry into Constantinople' (1876); and 'Thirst in the Desert' (1878). In his later years he devoted himself to portraiture and mural decoration. Two striking examples of the last named are the ceiling of the Opéra Comique, Paris, and 'Justinian in Council' in the Metropolitan Museum of New York. In 1893 he carried off the medal of honor of the Salon by his portrait of his son André, now in the Luxembourg Museum, Paris. Among other successful portraits are those of Queen Victoria and Queen Alexandra, M. de Blowitz, Anthony Drexel of Philadelphia and Frederick Ayer. He visited the United States several times. He was elected a member of the Institute in 1893 and was an officer of the Legion of Honor.

**BENJAMIN OF TUDELA,** Jewish traveler: b. Tudela, Navarre, Spain, in the 12th century. In 1160–73 he traveled from Saragossa, through France, Italy, Greece, Palestine, Persia to China, returning by Khuzistan, the Indian Ocean, Arabia, Egypt, Sicily and Spain. As the first European traveler who penetrated far into the East, he furnishes a great amount of interesting information, and though not free from error or fable, proves himself worthy of the high estimation in which he has always been held among his Jewish countrymen for soundness of judgment and extent of learning. His 'Itinerary,' first printed in Hebrew at Constantinople in 1543, has been often reprinted, the latest being the edition of Grünhut (Jerusalem 1903). It was translated into Latin by Arias Montanus in 1575, and afterward into Dutch, German and French. A part of the text was published by M. N. Adler in 'Quarterly Statement of the Palestine Exploration Fund' (October 1894), from a manuscript in the British Museum. Consult Carmoly, E., and Lekwel, L., 'Notice historique sur Benjamin de Tudèle' (1852). The edition of Asher (London and Berlin 1840–41) contains an English translation.

**BENKULEN.** See BENCOOLEN.

**BENNDORF, Otto,** German archæologist: b. 13 Sept. 1838; d. 2 Jan. 1907. He studied at Erlangen and Bonn, went to Italy and Greece, 1864–68, and was professor of archæology at the universities of Göttingen, Zürich, Munich, Prague and Vienna. In 1875 he made a second archæological tour to Samothrace; in 1881 and 1883 he made two expeditions, at state cost, to southwestern Asia Minor; in 1898 he was made director of the Austrian Archæological Institute. He wrote 'The Ancient Sculptures in the Lateran Museum' (in conjunction with Schöne) (Leipzig 1867); 'Ancient Historical Helmets and Sepulchral Masks' (1878); 'Travels in Southwest Asia Minor' (1884); 'Reisen in Lykien und Karien' (1884), etc.

**BENNE OIL,** a valuable oil expressed from the seeds of *Sesamum orientāle* and *S. indicum,* much cultivated in India, Egypt, etc., and used for purposes similar to those of olive oil. Also called sesamum oil and gingelly oil. See SESAME.

**BENNET, Elizabeth,** the heroine of Jane Austen's novel, 'Pride and Prejudice.' Consult Howells, 'Heroines of Fiction' (1901).

**BENNET, Henry** (EARL OF ARLINGTON), English statesman: b. Arlington, Middlesex, 1618; d. 28 July 1685. He was devoted to the cause of Charles I, and was appointed Under-Secretary of State; he fought in several battles, and was wounded at Andover, but after the battle of Worcester he retired to Spain. Upon the restoration he returned to England, and was appointed keeper of the privy seal, and shortly afterward Secretary of State. In 1664 he was created Baron Arlington; in 1670 became noted as one of the famous Cabal, but is not accused of entertaining their extreme sentiments; he was created Earl of Arlington in 1672. He was one of the plenipotentiaries sent to Utrecht to negotiate a peace between Austria and France, but the mission not being successful, an endeavor was made by his colleagues to cast the odium of the failure upon him. He defended himself, however, before the House of Commons, and was acquitted. The war with Holland, which is said to have been caused by the machinations of the Cabal, lost to Arlington the favor of the King and people; but in spite of this he received the office of chamberlain. In 1679 he became a member of the new council, and retained his office of chamberlain on the accession of James II.

**BENNETT, Alfred Allen,** American chemist: b. Milford, N. H., 30 Nov. 1850. He was graduated at the University of Michigan 1877; became professor of chemistry and physics in Iowa Wesleyan University; and since 1885 has been professor of chemistry in Iowa State College. Publications: 'Text Book of Inorganic Chemistry' (2 vols., 1895) and articles in the *American Chemical Society Journal.*

**BENNETT, Alfred William,** English botanist: b. Clapham, 24 June 1833; d. 23 Jan. 1902. He engaged in business as a bookseller and publisher in London, which he abandoned in favor of botanical research. He was the author of 'The Flora of the Alps' (1876–77), and of some admirable translations from the German: Sachs' 'Lehrbuch der Botanik' (1875); Seboth's 'Alpine Plants' (1879–84); and von Dalla Torre's 'Tourists' Guide to the Flora of the Austrian Alps' (1882).

**BENNETT, Charles Edwin,** American educator: b. Providence, R. I., 6 April 1858. He was graduated at Brown University 1878; pursued graduate studies at Harvard and in Germany 1881–84; was professor of Latin at the University of Wisconsin 1889–91; of classical philology at Brown 1891–92; and in the latter year was elected professor of Latin at Cornell. He has been a frequent contributor to classical journals and editor of classical texts. Publications: 'A Latin Grammar' (1895); 'The Foundations of Latin' (1898); 'Critique of Some Recent Subjunctive Theories' (1898); 'The Quantitative Reading of Latin Poetry' (1899); 'The Teaching of Greek and Latin in Secondary Schools' (with George P. Bristol) (1900); 'The Latin Language' (1907); 'Syntax of Early Latin' (Vol. I, 1910; Vol. II, 1914). He has edited 'Xenophon's Hellenica, Books V–VIII' (1892); 'Tacitus, Dialogus de Oratoribus' (1894); 'Cicero, De Senectute' (1897); and 'Cicero, De Amicitia' (1897); 'Horace, Odes and Epodes' (1901); 'Cæsar, Gallic War, Books I–IV' (1903); 'Cicero, Selected Orations' (1904); 'Virgil, Æneid, Books I–VI' (1905). Translator: 'The Characters of Theophrastus' (with Wm. A. Hammond) (1902); 'Horace, Odes and Epodes' (in Loeb Classical Library) (1913). He is a frequent contributor to philological journals.

**BENNETT, Edmund Hatch,** American lawyer: b. Manchester, Vt., 6 April 1824; d. Boston, 2 Jan. 1898. He was graduated at the University of Vermont in 1843, and admitted to the bar in 1847. He practised for many years in Taunton, Mass., and was mayor of that city 1865–67, and judge of probate and insolvency of Bristol County 1858–83. He was lecturer at Harvard Law School 1865–71, and afterward professor and dean at the Law School of Boston University. In 1896 he was chairman of the Massachusetts commission on "Uniformity of Legislation" throughout the United States and chairman of the commission to revise the Massachusetts statutes. His works include 30 volumes of 'English Law and Equity Reports'; '9–12 Cushing's (Mass.) Reports'; 'Massachusetts Digest' (3 vols.); 'Bingham on Infancy'; 'Blackwell on Tax Titles'; 'Leading Criminal Cases' (2 vols.); 'Goddard on Easements'; 'Benjamin on Sales'; 'Pomerov's Constitutional Law'; 'Indermaur's Principles of Common Law'; and 'Fire Insurance Cases' (5 vols.). He made contributions to professional journals, and was co-editor of the *American Law Register.*

**BENNETT (Enoch), Arnold,** English author: b. Hanley, Staffordshire, 27 May 1867. He was educated at Newcastle Middle School, first took up law as his profession, which he abandoned to take up journalism, becoming assistant editor of *Woman* in 1893, and editor in 1896. He gave up journalism in 1900 to devote himself exclusively to literature. He had published two novels — 'A Man from the North' (1898), and 'The Great Babylon Hotel' (1902), before his 'Anna of the Five Towns,' issued in the same year, revealed the fact that a new master had risen in English fiction, and his succeeding books dealing with the Five Towns — the pottery district of North Staffordshire in which the author was reared — have, in the opinion of H. G. Wells, given him the foremost place in contemporary English fiction. These are 'The Grim Smile of the Five Towns' (1907); 'The Old Wives' Tale' (1908); 'Clayhanger' (1910); 'The Card' (1911); 'Hilda Lessways' (1912) and 'The Matador of the Five Towns' (1912). A realist of great power, these tales deal with commonplace people in drab and unimpressive surroundings, and reveal in the most arrestive fashion how the seemingly outward monotony of their existence pulsates inwardly with moving drama. A writer of amazing fecundity, Mr. Bennett has already published over 30 volumes, the majority of which reach a high level as literature. Others of these are 'Leonora' (1903);

'A Great Man' (1904); 'Sacred and Profane Love' (1905); 'The Regent' (1913); 'The Price of Love' (1914). His plays include 'What the Public Wants' (1909); 'The Great Adventure' (1913) and (with Edward Knoblauch) the brilliant, satisfying and enormously successful 'Milestones' (1912), the motif of which, youth rebellious against the petrefaction and tyranny of age, and youth becoming old in its turn and bewildered before the onslaught of the next generation, is a favorite with the author.

**BENNETT, James Gordon,** American journalist: b. New Mill, Keith, Scotland, 1 Sept. 1795; d. New York, 1 June 1872. He was of French extraction. He entered a Catholic seminary at Aberdeen with a view to entering the priesthood and after a three years' course emigrated to America, arriving at Halifax, N. S., in 1819, where he taught bookkeeping. Meeting with little success he removed to Boston and for three years was there employed as proofreader. We next find him in New York writing for various newspapers after which he was engaged on the Charleston, S. C., *Courier* as translator of articles from Latin-American journals. He was soon back in New York, there established a commercial school and also did some work for the newspapers. In 1827 he became Washington correspondent of the New York *Enquirer* in which capacity he made a reputation for himself by his reports of the proceedings in Congress. In 1829 the *Courier* and *Enquirer* were consolidated and Bennett became associate editor and a recognized leader in politics. He withdrew from his editorial position in 1832, went to Philadelphia, and there acquired an interest in the *Pennsylvanian*, of which he became editor. Being of an independent nature and refusing to be the tool of the politicians his position made him many enemies and finally led to his withdrawal from Philadelphia. He now embarked on his real life work, investing his savings (about $500) and his experience in establishing a small four-page journal, which he sold for a cent a copy and called it the New York *Herald*. He was its sole editor, reporter and contributor. The office was in a cellar in Wall street and two printers shared in the profits of the enterprise. Mr. Bennett brought new views into the journalistic field, his new paper was free of all party control, the acquisition of news from every quarter of the globe became its chief aim; it exposed fraud in every guise, it disseminated facts, not opinions, and lauded everything calculated to benefit and elevate mankind in general. On 13 June 1835 it printed an article on the state of the money market, which gained wide attention and which, despite considerable opposition, became a permanent feature of the *Herald* and of every other newspaper. Toward the end of the same year Mr. Bennett originated the reporting in detail of public occurrences. He reported sermons and the proceedings of public meetings and introduced the practice of interviewing the chief actors in any great occurrence. He first used the telegraph for reporting and originated the system of distribution by carriers. By means of these and other novel features the *Herald* increased its circulation rapidly and within a few years was the most valuable newspaper property in the country. Mr. Bennett's strong personality was impressed upon the paper by his directing every detail of management and examining every item of news as well as the general moulding of public opinion. In 1867 James Parton wrote that "his paper is generally read and its proprietor universally disapproved." Bennett was often accused of utter lack of conviction, chiefly, perhaps, because of his reiterated remark "We have never been in a minority, and we never shall be." Consult Hudson, Frederic, 'Journalism in the United States from 1690 to 1872' (New York 1873) and Parton, 'Famous Americans of Recent Times' (Boston 1867).

**BENNETT, James Gordon,** American journalist (son of the preceding): b. New York, 10 May 1841; d. Beaulieu, France, 14 May 1918. He was educated abroad and returned to America in 1866. He became managing editor of the New York *Herald* in 1866, proprietor on the death of his father in 1872. In 1870 he sent Henry M. Stanley on the exploring expedition which resulted in the finding of Dr. Livingstone, and, in conjunction with the London *Daily Telegraph*, supplied the means for his journey across Africa by way of the Kongo in 1874–78. He organized a system of storm prognostications of value to shipping-masters; fitted out the Jeannette Polar expedition; and in 1883 was associated with John W. Mackay in organizing the new Commercial Cable Company. He founded the *Evening Telegram* in New York, and established daily editions of the *Herald* in Paris and London. He early gave much attention to yachting, in 1866 taking part in an ocean yacht race from Sandy Hook to the Needles, Isle of Wight, which was won by his schooner *Henrietta* against two competing yachts in 13 days, 21 hours, 55 minutes. In 1870 he raced in his yacht *Dauntless* from Queenstown to Sandy Hook, but was beaten by the *Cambria* by two hours. He resides mainly in Paris, collecting foreign news, and directing by telegraph the management and policy of his newspapers.

**BENNETT, Richard Bedford,** Canadian lawyer and legislator: b. Hopewell, New Brunswick, 3 July 1870. He was graduated LL.B. at Dalhousie University, Halifax, Nova Scotia, in 1893, and admitted to the bar of New Brunswick in 1894. After his removal to Calgary, Alberta, in 1897, he became a member of the local legislature (1898–1905, 1909–11), and was in 1911 elected to the House of Commons from Calgary, and soon made his mark in the House as an effective and ready debater. He accompanied Sir Robert Borden to England in 1915, and on his return was appointed director-general of national service.

**BENNETT, Samuel Crocker,** American lawyer: b. Taunton, Mass., 19 April 1858. He was graduated at Harvard in 1879. He is a son of Edmund Hatch Bennett (q.v.), and in 1898 succeeded his father as dean of the law school of Boston University. He is a member of the American Bar Association, and of the Massachusetts and Boston Bar Associations. He is one of the editors of 'Federal Decisions'; 'Smith's Leading Cases'; 'Benjamin on Sales'; 'Cyclopedia of Law and Procedure.'

**BENNETT, Sanford Fillmore,** American hymnologist: b. Eden, N. Y., 1836; d. 12 June 1898. He settled in Elkhorn, Wis., in 1860, and became editor of the *Independent*. Resigning this place, he entered the 40th Wisconsin Volunteers and served with them throughout the Civil War. In 1867 he aided J. P. Webster, the composer, in preparing 'The Signet Ring,' a Sunday-school hymnbook, to which he contributed about 100 hymns. 'The Sweet Bye and Bye' was one of the first of these. Many of Mr. Bennett's hymns and songs have been published in sheets.

**BENNETT, William Cox,** English songwriter: b. Greenwich, 14 Oct. 1820; d. Blackheath, 4 March 1895. He suggested that the bust of Longfellow be placed in Westminster Abbey, and formed a committee of 500, with the Prince of Wales at its head, to effect it. He was the author of 'Poems' (1850); 'The Trial for Salamis' (1850); 'Endowed Parish Schools and High Church Vicars' (1853); 'Queen Eleanor's Vengeance, and Other Poems' (1856); 'War Songs' (1857); 'Songs by a Song-Writer' (1858); 'Baby May, and Other Poems' (1859); 'Our Glory Roll, and Other National Poems' (1867); 'Contributions to a Ballad History of England, etc.' (1869); 'School-Book of Poetry' (1870); 'Songs for Sailors' (1872); 'Narrative Poems and Ballads' (1879); 'Songs of a Song-Writer' (1876); and 'Sea Songs' (1878); 'Prometheus the Fire-Giver' (1877); 'The Lark; Songs, Ballads, and Recitations for the People' (1885).

**BENNETT, Sir William Sterndale,** English composer: b. Sheffield, 13 April 1816; d. London, 1 Feb. 1875. He became a pupil of the Royal Academy of Music in 1826, studying under Cipriani Potter, Crotch and Lucas, and afterward Moscheles. By the advice of Mendelssohn, whose friendship he had gained, he studied in Leipzig from 1836 to 1838, and his performances and compositions were held in high esteem by the younger German musicians, and especially by Schumann. In 1842 he again visited Germany. He was one of the founders of the Bach Society in 1849; in 1855 he became conductor of the Philharmonic Society, in succession to Richard Wagner. After a period spent in teaching, conducting and composing, he was appointed professor of music at Cambridge in 1856, and was knighted in 1871. In 1868 he became principal of the Royal Academy of Music. He was too entirely dominated by Mendelssohn's influence to do great original work. He was a first rate pianist, and was highly rated as a composer, and was esteemed the greatest of contemporary English musicians. He is best known by his overtures, 'The Naiads' and 'Parisina'; his cantatas, 'The May Queen' and 'Woman of Samaria'; and his little musical sketches, 'Lake,' 'Millstream,' and 'Fountain.' Consult Bennett, V. J., 'The Life of William Sterndale Bennett' (London 1907).

**BENNETTSVILLE,** S. C., town and county-seat of Marlboro County, on the Bennettsville and Cheraw railroad and the Atlantic coast, 106 miles northeast of Columbia. Being in the center of an extensive cotton and corn raising district it has a number of textile mills and fertilizer manufactories. There is a large sanatorium in the town. Pop. (1910) 2,646.

**BENNIGSEN, Levin Augustus** (Baron von), Russian soldier: b. Brunswick 1745; d. 3 Oct. 1826. He entered the Russian service at an early age, and distinguished himself by his bravery in the war against Poland, under the Empress Catherine II. In 1806 he was appointed to command the Russian army which went to the assistance of the Prussians. He afterward fought the battles of Eylau and Friedland. After the Peace of Tilsit he retired to his estates. He commanded the Russian centre at Borodino and voted for a second battle in front of Moscow. Before the French retreat began he defeated Murat at Taratino on 18 October. He retired from the army because of differences with Kutusoff, but after the latter's death he became commander of the Russian army of reserve, which in 1813 he led into Saxony, took part in the battle of Leipzig, and was created a count by Emperor Alexander on the field. He aided in the pursuit of the French army and blockaded Hamburg. Because of ill health he retired from the Russian service in 1818, and settled on his paternal estate in his native country.

**BENNIGSEN, Rudolph von,** German statesman: b. Lüneberg, Hanover, 1824; d. Bennigsen, 7 Aug. 1902. After Hanover became a part of Prussia he was elected to the North German Diet and the Prussian Assembly, becoming vice-president of both. Entering the German Reichstag in 1871, he became prominent as leader of the National Liberals, warmly supporting Bismarck for years, but later opposing his policy toward the Socialists. After some years spent in retirement, Benningsen reentered politics in 1887 and continued active until 1897, when he resigned his position as president of the province of Hanover, which he had held from 1888.

**BENNINGTON,** Vt., town and county-seat of Bennington County, on the Rutland railroad, 36 miles east of Troy, N. Y., and 52 miles southwest of Rutland. It contains the villages of Bennington, North Bennington, and Bennington Centre; and has large woolen and knit-goods, hosiery, machinery, needles, paper, shirt and collar factories; a Soldiers' Home, a memorial battle monument over 300 feet high dedicated on the centennial of the admission of the State into the Union, 19 Aug. 1891; two national banks, public library, numerous churches and graded public schools. There are valuable deposits of brown hematite ore in the town. The government consists of a town president and a board of trustees elected annually at town meetings under the charter of 1885 but each village manages its own local affairs. The town, which was named after Governor Benning Wentworth of New Hampshire, was settled in 1761, and for many years before Vermont became a State was claimed by both New York and New Hampshire. Bennington was the home of Seth Warner and Ethan Allen and on 16 Aug. 1777, the battle of Bennington was fought here. Pop. (1910) 8,980. Consult Merrill and Merrill, 'Sketches of Historic Bennington' (Cambridge 1898).

**BENNINGTON, Battle of,** one of the early battles of the Revolution, fought at Bennington, Vt., 16 Aug. 1777. The army of General Burgoyne, marching to the south from Canada, and causing the abandonment of Ticon-

deroga by General St. Clair, created the greatest commotion throughout New England, since Boston was supposed to be its point of destination. General Stark chanced to be at the time at Bennington, having under his command a corps of New Hampshire militia, and he determined to confront a strong detachment of the enemy sent out under Colonel Baum to procure supplies. He hastily collected the Continental forces in the neighborhood, and on 16 August approached the British, whom, after a hot action of two hours, he forced to a disorderly retreat. The engagement was hardly over when a reinforcement arrived, sent by General Burgoyne, and the battle was renewed, and kept up several hours till dark, when the British forces retreated, leaving their baggage and ammunition. The loss of the enemy was 207 killed, 600 taken prisoners, and 1,000 stand of arms. The Americans lost only 14 killed and 42 wounded.

**BENNO, Saint,** bishop of Meissen (son of the Count of Bultenburg) and Apostle of the Slavs: b. Hildesheim, 1010; d. 1106. At 26 years of age he became a monk in the Benedictine convent of Saint Michael in his native town. His extraordinary virtues and learning caused his brethren to elect him abbot in 1042, but this dignity and office he resigned three months later. During the minority of Henry IV, he was appointed to the see of Meissen, and during his episcopate of 40 years he led the life of an ascetic. In the quarrel between Henry and the Saxon nobles he stood by the latter, and in consequence was led away prisoner when Henry passed through Meissen in 1075 after his victory on the Unstrut. He supported Pope Gregory VII in the long dispute between the Emperor and the Pope. In 1085 he was deposed at the Synod of Mainz, and two years afterward was reinstated. He died at the advanced age of 96 years and his tomb in the Cathedral of Meissen was venerated as a shrine, until the remains were transferred to the cathedral in Munich. The Bavarians chose him as their patron saint after he was canonized by Hadrian VI in 1523. Consult his 'Life' by Emser in the Bollandists for June 3d, also his 'Life' by Scyffort.

**BENOIST,** bĕn'-wäst', **René,** French theologian, confessor of King Henri IV, curé of Saint Eustache: b. 1521; d. 7 March 1608. He published a French translation of the Bible in 1566, for which he was censured by the Sorbonne and, later, by Pope Gregory XIII, leading to his expulsion from the Faculty of Theology. He was driven out of Paris in 1591, when he had associated with a political faction supporting the claims of King of Navarre to the throne of France. Henri IV nominated him Bishop of Troyes, but the Pope refused his sanction. He wrote about 150 works and pamphlets, mostly dealing with the history of his time.

**BENOIT,** bĕ-nwä, **Pierre Leopold Leonard,** Flemish musician and composer: b. Harelbeke, Belgium, 17 Aug. 1834; d. 1901. He studied under Fétis. He held the position of director of the Flemish School of Music in Antwerp from 1867 until his death. He was in his time the foremost advocate of a national school of music for Belgium. His compositions include 'Het Dorp in't Gebergte,' a comic opera (1856); the operas 'Isa' (1867); 'Pompeja' (1896); the oratorios 'The Scheldt'; 'Lucifer'; 'Children's Oratorio'; 'Drama Christi'; 'The Rhine'; incidental music to Vander Ven's 'Charlotte Corday,' and Goethem's 'Willem de Zwijer'; 'De Oorlog'; and 'Vlaanderen's Kunstroem', cantatas; a 'Missa Solemnis'; a 'Te Deum'; and a 'Requiem'; choral symphony, 'De Maaiers'; several choral works with orchestra pieces, and songs. He also wrote much on musical subjects. Consult L. Mortelmans 'Pierre Benoit' (Antwerp 1911).

**BENOIT DE SAINTE-MAURE,** dė sănt-mōr, French troubadour and chronicler: b. Touraine; fl. in the 12th century. From 1154 to 1189 he was attached to the court of Henry II of England. He wrote in about 42,300 octosyllabic verses a 'Chronicle of the Dukes of Normandy' to the year 1135. To him is usually ascribed the 'Romance of Troy,' founded on the story of the siege of Troy as written by Dictys Cretensis and Dares; it was translated into the languages of western Europe. Boccaccio, Chaucer, and Shakespeare would seem to be indebted to Benoit for the story of the loves of Troilus and Briseis (Cryseyde or Cressida being originally called Briseida). Another work from his hand is 'Le Roman d'Enéas', a continuation of the 'Romance of Troy.'

**BENRATH,** ben'-rät, **Karl,** German Protestant theologian and historian: b. Düren, 10 Aug. 1845. Having studied at and graduated successively from the universities of Bonn, Berlin and Heidelberg, he went to Italy, in 1871, where he spent some years in research. In 1879 he was appointed professor at Bonn and 11 years later accepted a similar appointment at Königsberg. He was also the founder of the *Revista Cristiana.* Much of his writing refers to the history of the Reformation in Italy, on which subject he is a leading authority. Among his chief works are 'Geschichte der Reformation in Venedig' (1887); 'Bernardino Ochino von Siena' (1892); 'Geschichte des Hauptvereins der Gustav-Adolf Stiftung für Ostpreussen' (1894); 'Julia Gonzaga' (1900); 'Luther im Kloster' (1905).

**BENSERADE,** bän-s'räd, **Isaac de,** French poet: b. Paris 1613; d. Gentilly 1691. He wrote for the stage, composed a great number of ingenious verses for the King and many distinguished persons at court and published a translation of the 'Metamorphoses' of Ovid. In the first half of the reign of Louis XIV the court and its followers patronized songs of gallantry, rondeaux, triolets, madrigals, and sonnets, containing sallies of wit, conceits and effusions of gallantry in the affected style then prevalent. No one succeeded so well in this art as Benserade, who was therefore, by way of eminence, called *le poète de la cour.* His collected works appeared in 1697, and an edition was published in 1875.

**BENSLEY, Thomas,** English printer: d. 1833. He is much known for an edition of 'Lavater,' printed by him in 1789, in 5 volumes quarto, and for an edition of the English Bible between 1800 and 1815, in 7 volumes quarto. He also printed Shakespeare in 1803, in 7 volumes octavo, and in 1806 Hume's 'England' in 10

volumes folio, which is adorned with elaborate portraits and engravings on copper. He was prominent also in the construction of the machine press invented by Köenig and applied to printing the *Times* newspaper in 1814.

**BENSON, Arthur Christopher,** English man of letters (son of Edward White Benson and brother of Edward Frederic, qq.v.): b. 24 April 1862. He was educated at Eton and King's College, Cambridge, was a master at Eton 1885–1903, and is now president, fellow and lecturer of Magdalene College, Cambridge. He has achieved distinction in nearly all departments of literature, as novelist, poet, biographer, and essayist. His first book, 'Memoirs of Arthur Hamilton' (1886) was published under the nom-de-plume of 'Christopher Carr.' His novels are lacking in movement, but are written in the fine English characteristic of the author. He published volumes of poems, marked by great refinement and sympathy, in 1893, 1895, 1896, 1900, 1905, and published his 'Collected Poems' in 1909. His biographies include 'Lives' of Archbishop Laud, and of his father Archbishop Benson, Tennyson, Kossuth, Edward Fitzgerald, Walter Pater, Ruskin, and 'Hugh: Memoirs of a Brother' (Robert Hugh Benson, the distinguished Catholic priest and author, q.v.). But it is as an essayist that a discriminating public thirsts for Mr. Benson. These are the fruit of ripe scholarship, broad and tolerant in its outlook, and are written with a gracious, winning charm, and in the reverential spirit typical of Anglican teaching at its best. Their titles are suggestive of their contents, and include: 'The House of Quest' (1903); 'The Hill of Trouble' (1903); 'The Isles of Sunset' (1904); 'From a College Window' (1906); 'The Gate of Death' (1906); 'The Altar Fire' (1907); 'The Silent Isle' (1910); 'The Leaves of the Tree' (1911); 'Thy Rod and Thy Staff' (1912); 'Watersprings' (1913); 'Where No Fear Was' (1914); 'Life and Letters of Maggie Benson' (1917). Mr. Benson collaborated with Viscount Esher in editing 'Selections from the Correspondence of Queen Victoria' (1907).

**BENSON, Carl,** pseudonym of **Charles Astor Bristed** (q.v.).

**BENSON, Edward Frederic,** English author: (son of Edward White Benson and brother of Arthur Christopher) (qq.v.) b. Wellington College, 24 July 1867. He was educated at King's College, Cambridge; worked at Athens for the British Archæological School (1892–95), and in Egypt for the Hellenic Society (1895). His writings include 'Dodo' (1893), a novel of London society which was very successful; 'Six Common Things' (1893); 'Rubicon' (1894); 'Judgment Books' (1895); 'Limitations' (1896); 'The Babe' (1897); 'Vintage' (1898); 'The Capsina' (1899); 'An Act in a Backwater' (1904); 'The Angel of Pain' (1906); 'The Blotting Book' (1908); 'The Osbornes' (1910); 'Mrs. Ames' (1912); 'The Weaker Vessel' (1913); 'Dodo the Second' (1914); 'Dinner for Eight' (comedy 1915); 'The Tortoise' (1917).

**BENSON, Edward White,** Archbishop of Canterbury: b. near Birmingham, 14 July 1829: d. Hawarden, 11 Oct. 1896. He was graduated at Cambridge in 1852 as a first-class and senior optime, and was for some time a master at Rugby. He held the headmastership of Wellington College from its opening in 1858 to 1872, when he was made a canon and chancellor of Lincoln Cathedral. In 1875 he was appointed chaplain in ordinary to the queen, and in December 1876 was nominated to the newly erected bishopric of Truro. Here he began the building of a cathedral (1880–87), most of the first cost, £110,000, having been gathered by his own energy. In 1882 he was translated to Canterbury to succeed Dr. Tait as primate of all England. A high-churchman, Dr. Benson was frequently select preacher at both universities, and published several volumes of sermons, a small work on 'Cathedrals,' and a valuable article on 'St. Cyprian' (London 1897). A distinguished ecclesiastical lawyer and diplomatist, he gave the important judgment in the Lincoln case on ritual. Consult his 'Life' by his son, Arthur Christopher Benson (London 1899; abridged edition 1901).

**BENSON, Egbert,** American jurist and politician: b. New York, 21 June 1746; d. Jamaica, N. Y., 24 Aug. 1833. He was graduated at Columbia College 1765; was member of the New York Legislature in 1777, and of Congress 1784–88, 1789–93, and 1813–15; judge of the supreme court of New York 1794–1801; and became a judge of the United States circuit court. He was a regent of the University of New York 1789–92, first president of the New York Historical Society in 1817–20, and wrote a 'Vindication of the Captors of Major André,' (1817) and 'Memoir on Dutch Names of Places' (1835).

**BENSON, Frank Weston,** American painter: b. Salem, Mass., 24 March 1862. He was educated at the Museum of Fine Arts, Boston, and in Paris; became a member of the Society of American Artists in 1888. He has won many honors from art institutes and academies, including the Hallgarten and the Clarke prizes at the National Academy of Design in 1899 and 1891; has done much in figure work with outdoor effects, but is best known for his portraits.

**BENSON, Sir Frederick William,** Canadian soldier: b. Saint Catherines, Ont., 2 Aug. 1849. He was educated at Upper Canada College and the Royal Military College, Sandhurst; served as a volunteer during the Fenian raids on Canada in 1866; joined the 21st Hussars in 1869; rose to be colonel of the 21st Lancers; served in the South African War 1900–01; was inspector-general of remounts, 1903–04; director of transport and remounts, 1904–07; and major-general in charge of administration, 1907–09. He was created C. B. in 1901, and K. C. B. in 1910, and on the outbreak of the Great War in 1914 was appointed chief of the Remount Commission.

**BENSON, Robert Hugh,** English Roman Catholic clergyman and writer: b. Wellington College, 1871; d. Salford, 19 Oct. 1914. He was son of Edward W. Benson, former archbishop of Canterbury and was educated at Eton and at Trinity College, Cambridge. After leaving Cambridge he prepared to enter the ministry, and joined the Community of the Resurrection at Mirfield. In 1903 he was received into the Roman Catholic church and was ordained to

the priesthood in 1904. After a year spent at Cambridge, he was appointed assistant priest at the Catholic church of that city and became a sort of unofficial Roman Catholic chaplain to the students of Cambridge University. In 1911 he received the appointment of private chamberlain to Pope Pius X. He published several novels and contributed many articles on religious subjects to magazines and newspapers. His writings include 'Richard Raynal'; 'Solitary'; 'The King's Achievement'; 'The Queen's Tragedy'; 'The Light Invisible'; 'St. Thomas of Canterbury'; 'Non-Catholic Denominations'; 'Christ in the Church'; 'The Dawn of All'; 'The Coward'; 'The Friendship of Christ'; 'Come Back'; 'Come Rope'; 'By What Authority?'; 'Loneliness'; 'Confessions of a Convert'; 'Paradoxes of Catholicism'; and 'An Average Man'. Consult Martindale, C. C., 'The Life of Monsignor Robert Hugh Benson' (1916).

**BENSON, William Shepherd,** American admiral: b. Macon, Ga., 25 Sept. 1855. He was graduated from the United States Naval Academy in 1877; rose to lieutenant in 1893; lieut.-commander in 1909; captain, 1909, and rear-admiral 11 May 1915. On the last-mentioned date he was named by Secretary Daniels as Chief of Naval Operations; in 1916 he was granted the title of admiral, and in January 1917 was designated as president ex-officio of the Navy General Board. During his long service of over 40 years Admiral Benson has performed numerous duties afloat and ashore, as squadron commander and in the Naval Academy. During the Naval War game held off the North Atlantic coast in August 1916, the admiral announced that beginning in the spring of 1917 all reserve battleships would be sent regularly to participate in target practice in order to maintain the personnel and batteries in fighting trim. A sensational development of that war game was the "defeat" of the defending "Blue" fleet under Admiral Helm by the attacking "Red" fleet under Admiral Mayo, who succeeded — theoretically — in landing "attacking" troops at Far Rockaway Beach, Long Island. Admiral Benson stated that when the Navy Department's plans for establishing submarine bases along both coasts were carried into effect, such a feat as the landing of a hostile force on these shores would be quite impossible. In March 1917 Admiral Benson was selected by the University of Notre Dame, Indiana, as the recipicnt of the Laetare medal for the year 1917, in recognition of his public services. This honor, which he was the first naval officer to receive, is regarded as one of the highest honors conferred upon laymen of the Roman Catholic Church in the United States. Shortly after the entry of the United States into the European War, Admiral Benson acted as principal representative of the Navy at the important conference held at the Navy Department with Admirals Browning and Grasset, of the British and French navies. In November 1917 Admiral Benson accompanied the American mission headed by Colonel Edward M. House to represent the United States at the inter-Allied war conference in Paris.

**BENSON,** Neb., city in Douglas County, five miles northwest of Omaha, on the Missouri River. Corn, flax, fruit, oats, wheat and vegetables are cultivated in the district, which is remarkably fertile. The city has a country club and is the seat of Saint James Orphanage. It owns the waterworks. Pop. 3,387.

**BENT, Charles,** American fur trader and territorial governor: b. Marietta, Ohio, 1799; assassinated, 19 Jan. 1847. After having been engaged in trapping and trading in the region of the Upper Missouri, Charles Bent, with his brothers, Robert, George and William and Ceran St. Vrain, under the firm name of Bent, St. Vrain & Company, established themselves in the Indian trade in the valley of the Upper Arkansas. At first they built a rude stockade between the present towns of Pueblo and Cañon City but, two years later, they began the erection of a permanent structure which was known as Bent's Fort, which was completed in 1832. Charles Bent married a lady who was a member of a prominent Spanish-Mexican family at Taos, N. M., where he settled, though still retaining his interest in the trading firm at Bent's Fort. After the occupation of Santa Fé by the American forces under the command of Gen. Stephen W. Kearney, in 1846, and upon the organization of the civil government for New Mexico, Charles Bent was appointed as the provisional governor of the Territory. Governor Bent was assassinated during an insurrection of the native people.

**BENT, James Theodore,** English traveler: b. near Leeds, 30 March 1852; d. London, 6 May 1897. He was graduated at Oxford University in 1875, and managed excavations in Greece, Asia Minor, Abyssinia, Arabia and South Africa, for the British Museum, the Hellenic Society and the Royal Geographical Society. He went to Mashonaland in 1891 to explore and excavate the ruins of the Great Zimbabwe, discovered in 1871 by Mauch. In his report he assigns to the ruins an Asiatic origin. In 1894 he was engaged on a tour of exploration in southeast Arabia. His publications include: 'A Freak of Freedom, or the Republic of San Marino' (1879); 'Genoa: How the Republic Rose and Fell' (1880); 'Life of Giuseppe Garibaldi' (1881); 'The Cyclades, or Life Among the Insular Greeks' (1885); 'The Ruined Cities of Mashonaland' (1892); 'The Sacred City of the Ethiopians' (1893). For the Hakluyt Society he edited a volume on 'Early Travels in the Levant.'

**BENT, Silas,** American naval officer: b. Saint Louis, 10 Oct. 1820; d. 1889. He entered the navy in 1836; served in the Seminole war, and was with Commodore Glynn and Commodore Perry on several cruises to Japan. He was always especially active in survey work; on Perry's Japan expedition he had charge of the hydrographic survey, and his excellent work became the basis of the surveys undertaken later by the Japanese government. His most important work was to delineate and describe scientifically the Kuro Shiwo, or Black Tide, the great northward-flowing stream of the Pacific, corresponding to the Atlantic Gulf Stream. He was on the brig, *Preble*, under Glynn, when the latter, in 1849, at Nagasaki, procured the release of 18 American seamen, who had been held as prisoners. He piloted the fleet into Napha, in the Liu-Kiu Islands, and

served as United States commissioner in the negotiations for a treaty with the Regent.

**BENT, William W.**, American fur trader and pioneer: b. Marietta, Ohio, 1809; d. near Las Animas, Colo., 19 May 1869. He became a trader and trapper on the Upper Missouri and, in 1826, with his brothers, Charles, Robert and George, helped to organize and establish the business of Bent, St. Vrain & Company in the valley of the Upper Arkansas, near the foothills of the Rocky Mountains. The permanent trading post of this firm, known as Bent's Fort, was built lower down, where the valley of the Arkansas emerges upon the Great Plains, 1828–32, and became one of the most noted places in the history of the surrounding region during the ensuing quarter century. In 1835, William Bent married Owl Woman, a daughter of White Thunder, the venerated keeper of the sacred bundle of "medicine arrows," the national talisman of the Cheyenne tribe. He gained great influence among the Indians, continuing to operate the trading business at Bent's Fort after the death of his brothers. He served a brief term as government agent for the Cheyenne, Arapaho, Comanche and Kiowa tribes, in 1859–60, and, at various times he acted as a mediator in the settlement of troubles with the people of those tribes. In October, 1865, he served as a member of the government peace commission which negotiated new treaties with the chiefs and head men of the tribes of the Southern Plains in the council which was held at the mouth of the Little Arkansas River. Bent County, Colo., was named in his honor. Consult 'Baskin's History of Arkansas Valley, Colorado'; also Kansas Historical Society Collections' (Vol. VII, p. 327; Vol. VIII, p. 491; Vol. IX, p. 564; Vol. X, p. 113; Vol. XI, p. 311).

**BENT-GRASS** (*Agrostis*), a genus of grasses usually regarded as weeds except in soils which cannot produce better. Common bent-grass or red-top (*A. vulgaris*) is a narrow-leaved species with trailing stems rooting at the joints, and small thin panicles of purplish satiny flowers. It is sometimes sown for lawns or for hay. March bent, white bent, or fiorin grass (*A. stolonifera*), has broader leaves than common bent, a much closer and larger panicle, and green or pale flowers. It is very common in low, damp places, which it overruns with its compact, trailing, rooting stems, and is a useful grass in newly reclaimed bogs or land liable to inundation. Brown bent-grass (*A. canina*) is known in the United States as Rhode Island bent-grass, and is highly prized as a lawn grass.

**BENTANG.** See ERIODENDRON.

**BENTEEN, Frederick William**, American soldier: b. Petersburg, Va., 24 Aug. 1834; d. 22 June 1898. He was educated in his native state; and at the outbreak of the Civil War went to Missouri and organized a company of Union volunteers. He became first lieutenant of the 10th Missouri Cavalry, 1 Sept. 1861; promoted captain, 1 Oct. 1861; major, 18 Dec. 1862; lieutenant-colonel, 27 Feb. 1864; and colonel of the 138th United States Colored Infantry, 15 July 1865; mustered out of volunteer service 6 Jan. 1866. On 28 July 1866 he was commissioned captain in the 7th cavalry; promoted major of the 9th cavalry, 17 Dec. 1882; and retired 7 July 1888. His most brilliant service after the war was in his campaigns against the Indians.

**BENTHAL FAUNA**, the abyssal or deep-sea fauna; the great assemblage of animals living at all depths below 150 fathoms in the North Atlantic, to 500 fathoms in the tropics. See also DEEP-SEA LIFE.

**BENTHAM, George**, English botanist; nephew of Jeremy Bentham (q.v.): b. near Plymouth, 22 Sept. 1800; d. 10 Sept. 1884. He was privately educated, early attached himself to botany, and having resided in southern France (where his father had an estate), 1814–26, he published in French (1826) a work on 'The Plants of the Pyrénées and lower Languedoc.' Having returned to England he studied law, and on this subject, as well as logic, he developed original views. Finally, however, he devoted himself almost entirely to botany; was long connected with the Horticultural Society and the Linnæan Society; and from 1861 onward was in almost daily attendance at Kew (except for a few weeks occasionally), working at descriptive botany from 10 to 4 o'clock as a labor of love. Along with Sir J. D. Hooker he produced the great work of descriptive botany, 'Genera Plantarum'; another great work of his was the 'Flora Australiensis' (in seven volumes). His 'Handbook of the British Flora' is well known.

**BENTHAM, Jeremy**, English jurist and publicist: b. London, 15 Feb. 1748; d. London, 6 June 1832. After an early education at Westminster School he went to Oxford in his 13th year, taking his bachelor's degree at 15, and his master's degree at 18. He studied English law, but never appeared at the bar, being enabled by easy circumstances to devote himself entirely to literary compositions. He did not, however, publish his chief works himself. They were arranged and translated into French by his friend, Etienne Dumont, and printed partly in Paris and partly in London. Among them are 'Treatises on Civil and Penal Legislation' (Paris 1802, 3 vols.), and 'Theory of Punishments and Rewards' (London 1801, 2 vols.). Bentham advocated a thorough correction of civil and criminal legislation. His 'Fragments on Government,' in opposition to Blackstone, appeared anonymously in 1776, and with his name, London 1823. In France his literary labors found a better reception than in England or Germany. A small pamphlet on the liberty of the press (London 1821) was addressed by him to the Spanish Cortes during their discussion of this subject; and in another ('Three Tracts Relative to the Spanish and Portuguese Affairs,' London 1821) he refuted the idea of the necessity of a house of peers in Spain, as well as Montesquieu's proposition that judicial forms are the defense of innocence. One of his latest works was the 'Art of Packing' (London 1821), that is, of arranging juries so as to obtain any verdict desired. His previous work, 'Essay on Parliamentary Practice,' edited from the author's papers by Dumont (Geneva 1815), and translated into German, contains many useful observations. His 'Introduction to the Principles of Morals and Legislation' (London 1823, 2 vols.) treats of the

principal objects of government in a profound and comprehensive manner. Zanobelli has translated Bentham's 'Theory of Legal Evidence,' into Italian (Bergamo 1824, 2 vols.). Among the earlier works of Bentham was his 'Defense of Usury,' showing the 'Impolicy of the Present Legal Restraints on the Terms of Pecuniary Bargains' (1787). At his death Mr. Bentham bequeathed his body to be dissected for the benefit of science. A complete edition of his works, with a biography by Bowring, was published in London (11 vols., 1843). He was a man of primitive manners, unblemished character and undoubted earnestness in the cause of the people at large. He is considered the father of the Utilitarians, or those moral political economists who view everything as it is affected by the principle of "the greatest happiness of the greatest number." Consult Albee, 'History of English Utilitarianism' (London 1902); Atkinson, C. M., 'Jeremy Bentham: His Life and Work' (London 1905; 2d ed., 1909); Graham, W., 'English Political Philosophy from Hobbes to Maine' (ib., 1899); Kent, C. B. R., 'The English Radicals' (ib., 1899); Mill, J. S., 'Bentham,' in *London and Westminster Review* (August 1838); Stephen, L., 'English Utilitarians' (London and New York 1900).

**BENTHOS**, the fauna of deep water, as distinguished from that of the surface (plankton). The benthal animals live perpetually at depths below a hundred fathoms, a few making nocturnal excursions to the surface, but as a whole constituting a deep-sea fauna. Consult Murray, 'Depths of the Ocean' (London 1912).

**BENTINCK, Lord William Charles Cavendish**, English soldier and statesman (second son of the 3d duke of Portland); b 14 Sept. 1774; d. Paris, 17 June 1839. He entered the army at an early age, and served in the Duke of York's campaign in Flanders, and also in Italy with the Russian army under Suwaroff, 1799–1801. In 1803 he proceeded to India as governor of Madras, returned thence in 1805, and subsequently went to Spain, where he commanded a brigade under Sir John Moore at Corunna. In 1810 he visited Sicily as British plenipotentiary, and commander-in-chief of the English troops. The most noticeable feature of this expedition is his bestowment on the Sicilians of a constitution, which, however, was overturned on the restoration of the Bourbons. He conducted in 1813 the expedition from Sicily to Catalonia, and in 1814 took possession of Genoa on the revolt of the inhabitants from French rule. The same year he returned to England, and subsequently entered Parliament as member for Nottingham. In 1827, under Mr. Canning's administration, he was sent to India as governor-general, and held that office till 1835, when he returned to England. Among the principal events of his administration are the abolition of the practice of suttee, the repeal of the restrictions which prohibited all Europeans, except servants of the company, from settling in India, the opening up of internal communications, the establishment of the overland route, and the recognition of the liberty of the press. In 1836 he again entered Parliament as member for the city of Glasgow, but was now unable from ill health to take any active share in political matters. Consult Boulger, 'Lord William Cavendish Bentinck' (Oxford 1892).

**BENTINCK, Lord William George Frederick Cavendish**, generally known as LORD GEORGE BENTINCK, English statesman (son of William Henry Cavendish, 4th duke of Portland); b. 27 Feb. 1802; d. 21 Sept. 1848. He entered the army, but quitted it early to become private secretary to Mr. Canning, who had married his mother's sister. In 1827 he entered Parliament as member for King's Lynn, and continued to represent that borough for the rest of his life. He was attached to no party at first, voted for Catholic Emancipation, and the Reform Bill. Up to 1846 he was a warm adherent of Sir Robert Peel and his measures; but on the latter announcing himself in that year a convert to free-trade principles, Lord George abandoned his old ally and came forward as the zealous and indefatigable leader of the Protectionists in the House of Commons. With the assistance of Disraeli he maintained this position for two years, and though often illogical, and sometimes unscrupulous in his statements, he nevertheless commanded much attention by the vigor and earnestness of his oratory and deportment. He was an ardent champion of religious liberty, and supported the measure for the removal of the disabilities of the Jews. He was famed for his skill in many sports, and helped put a stop to many abuses in connection with racing. Consult Disraeli, B., 'Lord George Bentinck: A Political Biography' (London 1851).

**BENTIVOGLIO**, bĕn-tē-vōl'yō, **Cornelio**, Italian ecclesiastic and poet: b. Ferrara, 1668; d. Rome, 1732. He early distinguished himself by his progress in the fine arts, literature, philosophy, theology and jurisprudence, and was a patron of the literary institutions at Ferrara. Pope Clement XI made him his domestic prelate and secretary to the apostolic chamber, and sent him, in 1712, as nuncio to Paris, where, during the last years of the reign of Louis XIV, he acted an important part in the affair of the bull *Unigenitus*. The Duke of Orleans, regent after the death of Louis, was not favorably disposed toward him; the Pope therefore transferred him to Ferrara, and in 1719 bestowed on him the hat of a cardinal, and employed him at first in Rome near his own person, then as legate *a latere* in Romagna, etc. Poetry had occupied his leisure hours. Sonnets composed by him may be found in Gobbi's Collection, Vol. III, and in other collections of his time. Under the name of SELVAGGIA PORPORA he translated the 'Thebais of Statius' into Italian. He was a great protector and patron of literature.

**BENTIVOGLIO, Guy** or **Guido**, Italian historian and ecclesiastic: b. Ferrara, 1579; d. Rome, 1644. He studied at Padua with great reputation, and afterward, fixing his residence at Rome, acquired general esteem by his prudence and integrity. He was an important figure at the courts of Clement VIII and Paul V. He was made archbishop and received the appointment of Apostolic nuncio in Flanders 1607, and nuncio in France in 1617. In 1621 he became cardinal. He had confidential relations with Urban VIII and died during the conclave which elected Urban's successor, and just when his own candidacy for the Pontifi-

cate was being generally advanced. He was an able politician, and his historical memoirs are valuable, especially his 'History of the Civil Wars in Flanders,' written in Italian, and first published at Cologne (1630), a translation of which, by Henry, Earl of Monmouth, appeared in 1654 (London, folio). His own 'Memoirs' and a collection of letters are reckoned among the best specimens of epistolary writing in the Italian language (an edition of which was published at Cambridge in 1727). His complete works were published in Venice in 1668.

**BENTLEY, John Francis,** English architect: b. Doncaster, England, 1839; d. Clapham, London, 2 March 1902. Upon the rebuilding of the great parish church in Doncaster, about 1856, Bentley was placed in the office of the clerk of the works, his architectural education practically beginning at this time. In 1862 he began practice as an architect on his own account, and his patrons from that date onward were mainly Roman Catholics. Among his lesser works are the Roman Catholic church and convent at Bocking, Essex; and the new Roman Catholic cathedral in Brooklyn, N. Y.; but the building with which his name will be inseparably associated is the Roman Catholic cathedral at Westminster, a structure of vast proportions with a nave wider than that of any church in England. Bentley left nothing in the way of design to subordinates, but designed and directed everything from the foundation to the minutest decorative feature. Bentley's death took place just as the Royal Institute of British Architects had voted to award him the royal gold medal.

**BENTLEY, Richard,** English divine, classical scholar, and polemicist: b. Oulton, near Wakefield, Yorkshire, 27 Jan. 1662; d. Cambridge, 14 July 1742. His father is said to have been a blacksmith. To his mother, a woman of strong natural abilities, he was indebted for the rudiments of his education, and in 1676 he entered Saint John's College, Cambridge. In 1682 he left the university, and became usher of a school at Spalding; a year later he took the position of tutor to the son of Dr. Stillingfleet, dean of Saint Paul's. He accompanied his pupil to Oxford, where he availed himself of the literary treasures of the Bodleian Library in the prosecution of his studies. In 1684 he took the degree of A.M. at Cambridge, and in 1689 obtained the same honor at the sister university. His first published work was a Latin epistle to Dr. John Mill on an edition of the 'Chronicle of John Malela,' which appeared in 1691. It displayed so much profound learning and critical acumen as to excite the sanguine anticipations of classical scholars from the future labors of the author. Dr. Stillingfleet, having been raised to the bishopric of Worcester, made Bentley his chaplain, and in 1692 collated him to a prebend in his cathedral. He was chosen the first preacher of the lecture instituted by the celebrated Robert Boyle for the defense of Christianity. The discourses against atheism which he delivered on this occasion were published in 1694; they have since been often reprinted, and translated into several foreign languages.

In 1693 he was appointed keeper of the Royal Library at Saint James'— a circumstance which incidentally led to his famous controversy with the Hon. Charles Boyle, afterward Earl of Orrery, relative to the genuineness of the 'Greek Epistles of Phalaris.' In this dispute Bentley was victorious, though opposed by the greatest wits and critics of the age, including Pope, Swift, Garth, Atterbury, Aldrich, Dodwell and Conyers Middleton, who advocated the opinion of Boyle with an extraordinary degree of warmth and illiberality. In 1699 Bentley, who had three years before been created D.D., published his 'Dissertation on the Epistles of Phalaris,' in which he proved that they were not the compositions of the tyrant of Agrigentum, who lived more than five centuries before the Christian era, but were written by some sophist under the borrowed name of Phalaris, in the declining age of Greek literature.

Soon after this publication Dr. Bentley was presented by the Crown to the mastership of Trinity College, Cambridge, worth nearly £1,000 a year. He now resigned the prebend of Worcester, and in 1701 was collated to the archdeaconry of Ely. His conduct as head of the college gave rise to accusations of various offenses, including embezzlement of college money. The contest, lasting more than 20 years, was decided against him, a sentence, depriving him of his mastership, being passed; but Bentley's superior skill and mastery of legal forms constantly baffled all attempts to oust him. In 1711 he published a quarto edition of Horace at Cambridge, which was reprinted at Amsterdam; and in 1713 appeared his remarks on 'Collins' Discourse on Free-Thinking,' under the form of a 'Letter to F. H. (Francis Hare), D.D., by Phileleutherus Lipsiensis.' He was appointed Regius professor of divinity in 1716, and in the same year issued proposals for a new edition of the Greek Testament, an undertaking for which he was admirably qualified, but which he was prevented from executing in consequence of the animadversions of his determined adversary, Middleton. In 1726 he published an edition of Terence and Phædrus; and his notes on the comedies of the former involved him in a dispute with Bishop Hare on the metres of Terence. The last work of Dr. Bentley was an edition of Milton's 'Paradise Lost,' with conjectural emendations, which appeared in 1732, but this proved a failure. He died at the master's lodge at Trinity, and was interred in the college chapel. His learning was early recognized on the continent. Dutch classical scholarship followed his lead and modern German classical scholars owe much to Bentley. He is justly regarded as the founder in England of the science of text criticism, and much of his work has served as foundation for the modern science of comparative philology. The German scholar, J. A. Wolf, wrote an excellent biography of Bentley; and an English biography of him was written by Monk (London, 2 vols., 1833). Consult Professor Jebb's monograph in the 'English Men of Letters Series' (New York 1882); Bartholomew and Clark, 'Bibliography of Bentley' (Cambridge 1908); Sandys, 'A History of Classical Scholarship' (Vol. II, Oxford 1908).

**BENTLEY, Robert,** English botanist: b. 1821; d. 1893. He qualified as a member of the Royal College of Surgeons in 1847. He became professor of botany at the London Institution and King's College, and editor of the

*Pharmaceutical Journal.* His works include 'Manual of Botany' (1861); 'Character, Properties, and Uses of Eucalyptus' (1874); and 'Medicinal Plants,' with Henry Trimen (1875–80).

**BENTON, Angelo Ames,** American clergyman: b. Canea, Crete, 1837. He was graduated at Trinity College, Hartford, Conn., 1856, and at the General Theological Seminary, New York. He was ordained in the Episcopal ministry in 1860. He was professor of Latin and Greek in Delaware College, Newark, Del., 1883–87, and professor of dogmatic theology in the University of the South, 1887–94, and rector at Albion, Ill., in 1905. His chief publications are 'The Church Cyclopædia: A Dictionary of Church Doctrine' (Philadelphia 1884); and 'Tome of Saint Leo' (1890).

**BENTON, Guy Potter,** American educator: b. Kenton, Ohio, 26 May 1865. After studying at Ohio, Wesleyan and Baker universities he took up a post-graduate course at Berlin. He was then appointed superintendent of schools at Fort Scott, Kan., and later, state assistant superintendent of public instruction. In 1896 he was appointed professor of history and sociology at Baker University; three years later he became president of Upper Iowa University. In 1902 he became president of Miami University and in 1911 president of Vermont University. He is the author of 'The Real College' (1909).

**BENTON, James Gilchrist,** American soldier and inventor: b. Lebanon, N. H., 15 Sept. 1820; d. Springfield, Mass., 23 Aug. 1881. He graduated at West Point in 1842, and served in the ordnance department throughout his life. He was in command of the Washington Arsenal and principal assistant to the chief of ordnance during the Civil War, at the close of which he was transferred to the Springfield (Mass.) Arsenal. For single bravery in rescuing exposed ammunition from fire, he was twice brevetted. The various models of the Springfield rifle, known as the models of 1866, 1868, 1873 and 1879, were made under his direction. He devoted himself especially to the improvement of firearms, and acquired distinction for his valuable inventions in this and other lines of his work. He refused to patent any of them, as he held that since the government had educated him it had every right to benefit from his time and talents. He published 'Course of Instruction in Ordnance and Gunnery for the United States Military Academy' (1861; 4th ed. 1875).

**BENTON, Thomas Hart,** American statesman: b. Orange County, N. C., 14 March 1782; d. 10 April 1858. He was the greatest of that most valuable and scarcely appreciated class, the Border State leaders, whose sympathies were with the South, and who had no feeling against slavery, yet at the cost of their influence and much personal peril opposed the political aggressions of slavery and the doctrines of disunion. Early orphaned, the eldest of a large family, after part of a course in the University of Pennsylvania he went with his mother to Tennessee as a pioneer, settling at the present Bentontown. A few years later he took up the study of law, and was admitted to the bar in 1811 under the patronage of his friend Andrew Jackson, then a judge of the Supreme Court. Elected to the legislature, he pushed through a judiciary reform bill, and one to give slaves the right of jury trial. In the War of 1812 he was aide-de-camp to Jackson, raised a volunteer regiment, was made lieutenant-colonel in the regular army, but saw no active service; meanwhile, 4 Sept. 1813, a misunderstanding over a duel of his brother's led to an affray in which the brother was stabbed, Jackson shot and Thomas H. thrown downstairs, and the former friends were at bitter feud for many years. In 1815 he removed to Saint Louis, practised law and established a newspaper, which involved him in duels (one of which cost his opponent's life, to Benton's lasting regret); but which he used so vigorously to advocate Missouri's admission to the Union as a slave State that she elected him one of her senators on her entrance in 1820, and re-elected him every term for 30 years. During this time he stood as one of the foremost public men of his generation — a speaker of great ability and mastery of facts, a hard-headed logician and tremendous debater, of astonishing memory, unwearying industry, an iron will and physique, and a power of wit, sarcasm and denunciation that made most men shrink from a contest with him. Being the spokesman of the Western Democrats, his policy and political feelings were coincident with Jackson's, their personal quarrel was at last arranged and Benton became Jackson's first lieutenant and admiring champion. In every regard he supported Western interests: he secured the passage of laws for pre-emption, donation and graded prices of lands, for throwing open the government mineral and saline lands to occupancy and for repeal of the salt tax; advocated transcontinental exploration and post-roads, a Pacific railroad, occupation of the mouth of the Columbia, trade with New Mexico, military stations through the Southwest, amicable relations with Indian tribes and everything conducive to opening up the West and making it prosperous. This made him invincible there till the slavery question drove him into opposition. He supported Jackson in his refusal to recharter the United States Bank, and made a series of speeches urging the adoption of a metallic currency only, which were widely circulated, gained him the nickname of "Old Bullion," and had much to do with the creation of the sub-treasury scheme. When Jackson removed the Secretary of the Treasury, Duane, for refusing to check out the deposits in the bank, the Senate adopted a resolution censuring him for it; Benton set about having the resolution expunged from the records, and after a protracted struggle succeeded, despite the logical absurdity of his motion, in accomplishing his purpose by a series of fervid panegyrics on Jackson. In the Nullification contest, Benton was Calhoun's chief opponent, not only as Jackson's supporter, but by conviction; and the two men of might — the chiefs of the State-Rights and Nationalist wings of the Democracy — remained deadly foes until Calhoun's death. In the Oregon boundary dispute Benton opposed the "fifty-four forty or fight" war-cry; it was dropped, but the Polk administration was glad of an excuse to drop it in order to push the Mexican war, and had no notion of dimin-

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ishing the area of slavery to enlarge that of freedom. He favored the vigorous prosecution of the war, and came near being made commander-in-chief, from his close acquaintance with the territory. But from this time on, the slavery problem swallowed up every other. Benton fought Calhoun's State-Rights resolutions in retort to the Wilmot Proviso (q.v.), and they never came to a vote; but Calhoun sent them to various State legislatures to adopt and utilize for instructing their senators, and they were pushed through the Missouri legislature without Benton's knowledge. He denounced them as misrepresenting the people, canvassed his State for re-election in a long-famous series of powerful and caustic speeches was supported by his party, but defeated by a fusion of Whigs and anti-Benton Democrats, and his senatorial service ended with 1850. He opposed the Clay compromise resolutions of that year, however (see COMPROMISE of 1850), with sarcasm still quoted. In 1852 he canvassed Missouri for election to the lower House and was triumphantly returned. He supported Pierce for election and in Congress till the Kansas-Nebraska bill came up. Against that he made one of his greatest speeches, and the administration thereupon ousted all his Missouri supporters, and he was defeated for re-election by the now dominant ultra-Southern sentiment in the Democratic party. The time of mediators and middle courses had gone by. He now set about writing his remarkable 'Thirty Years' View' (1854–56), a most valuable account of his senatorial experiences and the secret political history of the years 1820–50. In 1856 he ran for governor, but a third ticket in the field defeated him. In the campaign of 1856 he supported Buchanan against his own son-in-law, Frémont, as representing the party of union; but materially changed his mind before his death. In these last two years, though in extreme old age, he carried through the immense and useful labor of compiling an abridgment of the debates in Congress from the foundation of the government to 1850, published later in 15 volumes. He also published an 'Examination of the Dred Scot Case' (1857). Consult Meigs, W. M., 'Life of T. H. Benton' (Philadelphia 1904); Rogers, J. M., 'Thomas H. Benton' (ib. 1905); Roosevelt, 'Thomas Hart Benton' (Boston 1887).

**BENTON**, Ill., city and county-seat of Franklin County, on the Illinois Central, the St. Louis, Iron Mountain and Southern and the Chicago and Eastern Illinois railroads, 125 miles southwest of Springfield. It is the centre of an extensive coal mining region. A large stove foundry is located in the city and it also contains the old homestead of Gen. John A. Logan. In 1913 the commission form of municipal government was adopted. Pop. 2,675.

**BENTON HARBOR**, Mich., city in Berrien County, situated on the Saint Joseph's River, one and a half miles from Lake Michigan; on the Cleveland, C. & C. and Père Marquette railroads. It is also connected with the lake by a ship canal and thus by steamboat lines with Chicago and Milwaukee. It has a large trade in lumber, grain and fruits, especially the latter, and has also considerable manufacturing interests, including manufactories of fruit packages, furniture, machinery, flour, vinegar and canned fruit. In the city and vicinity are mineral springs with medicinal properties. The waterworks are owned by the city. Pop. 9,185.

**BENTONVILLE**, Ark., town and county-seat of Benton County, situated northwest of Little Rock; on the Saint Louis and San Francisco Railroad. It is the seat of Bentonville College and a Baptist academy. It contains several springs, three of which have medicinal properties. The town is the centre of one of the most productive apple-growing regions in the United States; it also carries on a considerable trade in fruit, timber, grain and live stock, and has extensive fruit-evaporating works and fruit-brandy distilleries, various factories, mills, etc. The waterworks and electric plant are owned by the town. Pop. 2,000.

**BENTONVILLE**, N. C., a village in Johnston County, noted as the place where a stubborn battle was fought during the Civil War. Here, during his march from Savannah through the Carolinas, Sherman, at the head of 65,000 National troops, encountered 24,000 Confederates under Johnston. A battle took place 18 March 1865, Johnston having come up in great haste from Smithfield, intending to surprise Sherman. The latter, however, was ready for him, and Johnston was thrown on the defensive near Mill Creek. Johnston was partially defeated and retreated to Smithfield. The Federal loss was about 1,600, the Confederate about 2,700. Consult Johnson and Buel, 'The Battles and Leaders of the Civil War' (1887).

**BENTZEL-STERNAU**, bĕnt'zĕl-stär'now, **Count Karl Christian Ernst von**, German novelist: b. Mainz, 9 April 1767; d. Mariahalden, Switzerland, 13 Aug. 1849. In 1808 he was Minister of the Interior of the Grand Duchy of Baden, in 1810 president of the Supreme Court of Mannheim and in 1812 Minister of State and Finance of the Grand Duchy of Frankfort. He is esteemed as a humorist after the manner of Jean Paul; and his satirical romances, 'The Golden Calf' (1802–04); 'The Stone Guest' (1808); 'Old Adam' (1819–20); 'The Master of the Chair,' together form a series. His dramatic ventures had less success. He translated Young's 'Night Thoughts.'

**BENTZON, Th.**, the pseudonym of Marie Thérèse Blanc (q.v.).

**BENUE**, bĕn'wē, or **BINUE**, a river of west Africa, the chief tributary of the Niger. It rises in the Bub'n Jidda hills on the east of Adamawa, flows for a short distance northwest then west to Bassama, after which its course is generally southwest to its junction with the Niger at Lokoja and 300 miles from the coast. Its length is about 850 miles. Its width in its lower reaches is from 1,600 to 3,200 feet, and it is navigable for about 600 miles during the rainy season, but is very shallow in the dry season (January-May). The source of the Benue was long unknown. Dr. Barth, who came upon the river in 1851, while traveling in Adamawa, near the confluence of the Faro, which joins it on its left bank about lat. 12° 30′ E., was told that it came from the southeast, a distance of nine days' journey. In consequence of his discovery an expedition was fitted out by the British government for the

purpose of exploring the Niger from its mouth upward. The exploration was made in a small steamer called the *Pleiad,* and was under the command of Dr. William Balfour Baikie. After reaching the point of confluence of the Benue with the Niger, about lat. 7° 40′ N., Dr. Baikie followed the former eastward for a direct distance of about 370 miles. The point thus reached was about lat. 9° 25′ N.; long. 11° 30′ E. There was sufficient depth of water, though the river was only rising, to allow a still further exploration. The natives, however, had begun to display their hostility in such a manner as made it necessary to return. The result was to show that a large, fertile and populous tract of a region of Africa previously in a great measure unknown was accessible by means of a navigable river. A second expedition, also under Dr. Baikie, explored the same river in 1857. In 1879 a small steamer belonging to the Church Missionary Society went up the river 140 miles, and its source was discovered by Flegel in 1883. The explorer Robert Hegel journeyed along its navigable length and explored some of its tributaries in 1879. In 1892 the expedition of Mizon practically gave us a complete knowledge of the river. Its principal tributaries are the Majo, Kebbi, Gongola, Kadera and Faro. The freedom of navigation on the river is guaranteed by an agreement between Germany and Great Britain. With the Niger the Benue forms the only navigable route to the far interior of Africa.

**BENVOLIO,** bēn-vō'lĭ-o, in Shakespeare's 'Romeo and Juliet,' a friend of Romeo and nephew of Montague.

**BENWOOD,** W. Va., town in Marshall County; on the Ohio River, adjoining Wheeling, and on the Pittsburgh, Cincinnati, Chicago, and Saint Louis, and the Baltimore & Ohio railroads. It is the centre of a large iron-mining region and has several rolling mills and blast furnaces. About a mile south of the town is a government dam, built to hold the Ohio River in a navigable condition during dry periods. Benwood was settled about 1800. Pop. 4,976.

**BENZALDEHYDE,** or **BENZOIC ALDEHYDE,** a colorless, volatile oil, familiarly known as "oil of bitter almonds." Benzaldehyde does not occur in the bitter almond in nature, but is formed, when the kernels are crushed and allowed to stand in water, by the decomposition of a glucoside known as "amygdalin." It has the chemical formula $C_6H_5.CO.H$, boils at 354° F., and has a specific gravity of about 1.05 and a refractive index of 1.56. Benzaldehyde is prepared, artificially, by boiling benzyl chlorid with nitrate of lead, copper or sodium and subsequent treatment with sodium acid sulphite, with which the benzaldehyde forms a crystalline compound that may be easily separated from the mother liquor by filtration or otherwise.

**BENZENE,** an aromatic hydrocarbon discovered by Faraday in 1825 and called by him "bicarburet of hydrogen." It has the chemical formula $C_6H_6$, and is the fundamental substance from which the extensive series of "aromatic compounds" is obtained. In 1845, Hofmann proved its existence in coal tar and that substance now constitutes its most important commercial source. In the manufacture of benzene, coal tar is distilled at a temperature not exceeding 300° F., and the distillate is treated with caustic soda to remove phenols and subsequently with sulphuric acid to remove basic substances. It is then redistilled, the temperature (at least in the upper part of the still) being kept as low as 212° F., in order to prevent toluene from passing over. In order to effect a still further purification, the benzene so obtained may be cooled by a freezing mixture of ice and salt. The true benzene solidifies when thus treated and the fluid impurities that it contains may be expelled by pressure or by the aid of a centrifugal drier. Pure benzene is a colorless liquid, strongly refractive, boiling at about 177° F., and freezing at 40° F. It does not mix with water, but mixes readily with alcohol, acetone, glacial acetic acid, chloroform and ether. It crystallizes in the trimetric system when solidified by cold and dissolves iodine phosphorus, sulphur, oils, resins, fats and alkaloids. It expands by about 0.00075 of its own bulk, per degree increase in its temperature on the Fahrenheit scale. Its specific gravity is about 0.88 at 15° and its specific heat is 0.40. For the chemical constitution of benzene, see AROMATIC COMPOUNDS.

Benzene forms two general classes of compounds, known respectively as "addition" and "substitution" products. In forming an "addition" compound, benzene merely takes up atoms or molecules of some other substance, without parting with any of its own atoms; the new substance being simply "added" to the benzene. Benzene hexabromid, $C_6H_6Br_6$, is a good example of a benzene addition compound. It is formed by dropping bromine into boiling benzene, in direct sunlight; the hexabromide crystallizing out upon cooling. The "substitution" compounds of benzene are far more numerous and important than the "addition" compounds, however. They are formed by replacing one or more of the typical hydrogen atoms in the benzene by an equal number of other atoms or monad radicals. The general theory of benzene substitutions is given under Aromatic Compounds; but a few of the more important examples of such substitution products may be given here. The radical $C_6H_5$ (which is not capable of independent existence) is called "phenyl," and is often represented by the symbol Ph. The mono-substitution compounds of benzene, in which one atom of the hydrogen in the original benzene has been replaced by a radical (or by an atom different from hydrogen), may then be regarded as addition compounds of the radical phenyl. Thus "monochlorbenzene," $C_6H_5Cl$, may also be regarded as chloride of phenyl and its formula may be written PhCl. Benzene itself may even be regarded as hybrid of phenyl, its formula being written $C_6H_5.H$, or PhH. Carbolic acid (or "phenol") is hydrate of phenyl, its formula being PhOH, the radical OH being here substituted for one atom of the hydrogen in the original benzene. Nitrobenzene, $PhNO_2$, is formed from benzene (PhH) by the action of nitric acid, in accordance with the equation

$$PhH + HNO_3 = PhNO_2 + H_2O.$$

It is used in the arts for the manufacture of

aniline (q.v.). Aniline itself is an amide of phenyl, obtained by replacing an atom of H in ammonia ($NH_3$) by phenyl, or by replacing an atom of hydrogen in benzene by the radical $NH_2$. The formula of aniline may be written $PhNH_2$, and aniline may be called "amido-benzene," or "phenylamine." (See AMIDE; AMINE). Methyl-benzene, $C_6H_5.CH_3$, in which one of the original hydrogen atoms of the benzene is replaced by the radical $CH_3$ ("methyl") is also an important benzene substitution compound and is known to chemists as toluene. That portion of the original benzene which remains intact, after a substitution, is called the "benzene residue." In a mono-substitution compound of benzene, further substitutions may be made by replacing one or more of the hydrogen atoms in the "benzene residue" by univalent radicals, and secondary, tertiary, and higher substitution compounds may be thus formed. The classification of the secondary substitution compounds is given under Aromatic Compounds. For the classification of higher compounds, special treatises on organic chemistry must be consulted. It may be mentioned, however, that if A, B, C and D are monad radicals, there are no less than 30 distinct substances possible, which shall all have the same general formula $C_6H_2ABCD$. This fact illustrates the exceeding complexity of the general theory of benzene substitutions compounds. The full theory is even more complex than this example indicates, however, for it often happens that the hydrogen in a substituted radical can be replaced by another radical, as well as the hydrogen of the "benzene residue." Thus in methylbenzene (or toluene), $C_6H_5.CH_3$, the radical OH may be substituted for one of the hydrogen atoms. If the hydrogen so displaced occurs in the "benzene residue," the resulting compound will be "cresol," $C_6H_4(OH).CH_3$, a substance which (since it is a di-substitution compound) can exist in three isomeric forms. If, on the other hand, the OH takes the place of one of the hydrogen atoms of the "methyl" radical, the resulting compound will be "benzyl alcohol," $C_6H_5.CH_2(OH)$.

When a primary amine of the fatty series is acted upon by nitrous acid ($HNO_2$), the $NH_2$ group of the amine is replaced by OH, with the formation of an alcohol; but when nitrous acid acts upon aromatic amines, the products are quite different and are known as "diazo-compounds." Thus when nitrous acid acts upon aniline nitrate, a compound having the formula $C_6H_5.N_2.NO_3$, and known as "diazobenzene nitrate," is formed. This is regarded by chemists as a compound of the univalent radical $C_6H_5-N=N-$. When the free affinity of this radical is saturated by the addition of phenyl ($C_6H_5$), the resulting compound, $C_6H_5.N_2.C_6H_5$, is known as "azobenzene," or as "benzene-azo-benzene." Azobenzene may be prepared by heating nitrobenzene with a solution of $SnCl_2$ in aqueous caustic soda. It is deposited from a solution in benzene in the form of bright red trimetric plates and owes its importance largely to the fact that aniline yellow, $C_6H_5.N_2.C_6H_4(NH_2)$, is one of its derivatives.

Benzene is an exceedingly inflammable substance, burning with a luminous flame and the generation of a great amount of heat. It is volatile and its vapor forms a dangerously explosive mixture with air when present in any considerable quantity. Hofmann, mentioned above as having first demonstrated its existence in coal tar, lost his life on 25 Feb. 1855, while experimenting with a considerable quantity of benzene, through the mass accidentally taking fire. Benzene may be formed synthetically by heating acetylene gas ($C_2H_2$) to dull redness in a glass tube. Polymerization occurs and among numerous other substances benzene is formed in accordance with the equation $3C_2H_2 = C_6H_6$. In works on chemistry, benzene is often called "benzol." (Compare BENZINE).

This product is so widely employed in the industry of the aniline dyes that chronic poisoning is by no means uncommon. It is usually breathed as vapor in the vat rooms and causes, after some exposure, dizziness in the head, ringing in the ears, nausea and vomiting, coughing and sleepiness which latter may deepen to unconsciousness somewhat resembling the narcosis caused by breathing chloroform. In some instances there are blood changes, with cyanosis and death. Treatment by fresh air, oxygen, free diuresis, catharsis and diaphoresis, and if the blood changes are marked infusion of physiological salt solution may be necessary.

**BENZIDINE**, an important substance belonging to the benzene (or aromatic) series and used in the arts for the manufacture of Kongo red, chrysamin and other so-called "coal-tar colors." The coloring matters derived from benzidine have the unusual and valuable property of dyeing cotton without the use of a mordant to fix them upon the fibre. Benzidine has the formula $H_2N.C_6H_4.C_6H_4.NH_2$, where both the benzene rings contain the $NH_2$ and the $C_6H_4NH_2$ radicals in the para position, and is prepared, commercially, by heating nitrobenzene (see BENZENE) with caustic soda and zinc dust and subsequent treatment with hot dilute hydrochloric acid. Pure benzidine crystallizes in silvery scales which melt at 252° F., and boil at a temperature probably above 700° F. It is easily soluble in alcohol and ether; it also dissolves readily in hot water, but is almost insoluble in cold water.

**BENZINE**, the commercial name for a mixture of the lighter and more volatile hydrocarbons that pass off in the earlier stages of the distillation of crude petroleum. It is essentially different from benzene (q.v.), the latter being a definite chemical substance, belonging in the group of Aromatic Compounds (q.v.); while "benzine" is a more or less indefinite mixture of hydrocarbons that chiefly belong to the paraffin series. Benzine differs but little from naphtha and gasolene, such slight differences as exist being due to variations in the proportions in which the constituent hydrocarbons are present. Benzine is a colorless, mobile liquid, very volatile and inflammable. It is valuable as a solvent for fats, oils and resins and is much used about the household as a cleansing agent. Its vapor, when mixed with air, is highly explosive and serious accidents are common, as the result of using it in the vicinity of lighted lamps or

tobacoo pipes or near stoves in which fires are burning. In printing offices it is used for cleaning type and for removing ink from press rolls. It is also used in large quantities for enriching illuminating gas. Benzine is much lighter than water and will not mix with it. It boils at from 160° to 190° F. Poisoning by benzine is rare. The vapor has been used, combined with chloroform and ether, for purposes of narcosis, but it is questionable if it will ever be very popular. Instances of sudden death following the prolonged breathing of benzine vapor have been reported.

**BENZOATE OF SODA,** or **SODIUM BENZOATE,** most commonly used as a preservative in canned foods. Under the Federal law regulating the purity of foods one-tenth of 1 per cent may be used for this purpose, but the popular feeling against its use in any quantity is causing the higher class of packers to discard it entirely. Its harmfulness as an ingredient in preserved foods has not been entirely established. See PRESERVATIVES.

**BENZOIC ACID,** an organic acid, belonging in the aromatic series and having the formula $C_6H_5.COOH$. It occurs in benzoin gum and in certain other resins and balsams. It may be obtained also from the hippuric acid that occurs in the urine of the horse and other herbivorous animals by boiling that acid with concentrated hydrochloric acid. Benzoic acid is used as a mordant in calico printing, and in the manufacture of aniline blue. It is also used in medicine and as a preservative agent for anatomical specimens. The largest use of benzoic acid, however, is as a food preservative. With its salt, soda benzoate, it is used in huge quantities in catsups, sauces, jellies, jams, fruit syrups, sausages and other chopped meats, cider, soft drinks and many other similar food preparations. This use was questioned by the U. S. Chemistry Bureau and led to an elaborate series of experiments upon a so-called "poison squad" of young men. The report, published as Bulletin 84 of the Bureau, was to the effect that benzoic acid and its salts were distinctly deleterious to health and should not be permitted in foods. A referee board of eminent physiological chemists were called to confirm or refute the Chemistry Bureau's findings, and they decided that the largest amount that would be eaten in the ordinary use of such preserved foods would not be injurious to health. Upon this decision the government permits such use of benzoic acid and benzoate of soda on condition that the proportion used is stated plainly on the label covering the goods. Many States, however, prohibit it absolutely; others restrict its use in foods to very narrow limits.

The benzoic acid that is used for medical purposes is obtained by sublimation, through a paper filter of benzoin gum over a sand bath, at a temperature of about 340° F. When so prepared, the acid has a pleasant, vanilla-like odor, which is imparted to it by a trace of an aromatic oil that comes over with it from the gum. For most of the purposes for which it is used in the arts, benzoic acid is formed by chlorinating toluene. The resulting benzotrichloride is converted into benzoic acid by oxidation with dilute nitric acid in boilers provided with mechanical stirrers. Hydrochloric acid is liberated and the benzoic acid is recrystallized or distilled under vacuum. Benzoic acid is also made from benzonitrile ($C_6H_5.CN$) obtained from the "middle oils" or carbolic oils in coal-tar distillation. After washing the carbolic fraction with dilute soda lye to remove the phenol and cresol, the remaining oil is placed in a jacketed vessel. Caustic soda lye of a specific gravity of 1,400 is added in quantity about double the benzonitrile content, and the mixture agitated. Steam is passed in as long as ammonia is evolved in quantity. The still then contains an upper oily layer and a lower alkaline layer. The latter is neutralized with carbonic acid or a mineral acid, and after the remaining traces of phenol and resinous matters are removed, the resulting solution of sodium benzoate is decomposed while hot by adding an excess of acid. Upon cooling, pure benzoic acid separates in white crystals.

Benzoic acid dissolves in hot water, but crystallizes out, upon cooling, in needles or pearly prisms. It is soluble in ether, alcohol and benzene. It melts at 250° F., boils at 480° F., and may be sublimed at intermediate temperatures. Its salts are called "benzoates." The methyl, ethyl, isobutyl and amyl esters of benzoic acid are used in making synthetic perfumes and flavors.

In medicine benzoic acid and its salts, the benzoates (sodium, ammonium, lithium) are widely employed for diseases of the bladder and of the mucous membranes of the lungs. They are also used as intestinal germicides. Benzoic acid has marked bactericidal properties, and may be used for sterilizing purposes. Taken into the intestines it prevents excessive bacterial decomposition; absorbed into the blood it is partly broken up, and in the kidneys is eliminated in part as hippuric acid, rendering the urine acid. It is therefore useful in alkaline fermentations of the urine, particularly in cystitis, pyelitis, etc. Benzoic acid is partly eliminated by the lungs, here acting to increase the amount of mucus, it is therefore used to loosen the mucus in tight coughs. As a parasiticide, benzoic acid is very valuable in scabies. Benzoates are practically useless in gout.

**BENZOIC ALDEHYDE.** See BENZALDEHYDE.

**BENZOIN,** an aromatic compound, soluble in hot alcohol and crystallizing in colorless, six-sided prisms having the formula $C_6H_5.CH(OH).CO.C_6H_5$. Benzoin is best prepared by acting upon pure benzaldehyde with a hot alcoholic solution of cyanide of potassium. Upon cooling, the benzoin separates and may be removed by filtration. The action of the cyanide is not known, because the chemical change involved in the foregoing process of manufacture appears to consist merely in the uniting of two molecules of benzaldehyde to form a single molecule of benzoin.

**BENZOIN GUM,** or **GUM BENJAMIN,** a reddish brown resin that exudes from the tree *Styrax benzoin,* which grows in Sumatra, Java and other parts of the East. It is a mixture of various resinous substances, together with free benzoic acid. Cinnamic acid is also present in the free state in many cases, but it is absent from the Siamese gum. Benzoin gum has a pleasant odor when burned, and for

this reason has been much used for incense and in making pastilles. It has antiseptic properties, and preparations of it are used as a dressing for wounds, and in the manufacture of court-plaster. Benzoin is also administered internally, especially in asthma and other pulmonary affections and chronic catarrh. It is readily soluble in alcohol, and when the tincture so formed is dropped into water, it forms a white, milky fluid, which is used in France as a cosmetic, under the name "*lait virginal.*" The gum is obtained from the styrax-tree by making incisions in the bark, through which the resin oozes. It is allowed to harden by exposure to the air before removal. The best gum is obtained during the first three years of the tree's life, though a good quality may be had for seven or eight years subsequently. The Siamese gum is esteemed more highly than that from Sumatra.

**BENZOL.** See BENZENE.

**BENZONI, Girolamo,** bĕn-zō'nē, jē-rō-lä'-mō, Italian traveler: b. Milan, 1519; d. after 1566. He went to Spanish-America in 1542, visited the principal places then known, and frequently joined the Spaniards in raids on Indian settlements; and after returning to Italy (1556) published a narrative of his adventures, 'History of the New World' (Venice 1565).

**BENZOYL,** in chemistry the monovalent radical $C_6H_5.CO$. Benzoyl cannot exist in the free state, but it occurs in the combined state in many organic substances. Benzaldehyde (or oil of bitter almonds), $C_6H_5.COH$, may be regarded as its hybrid, and benzoic acid, $C_6H_5.COOH$, as its hydrate.

**BENZYL,** the monovalent organic radical $C_6H_5.CH_2$, which does not exist in the free state, but which has numerous important compounds. Toluene is its hybrid. Benzylamine, $C_6H_5.CH_2NH_2$, is derived by substituting benzyl for one of the hydrogen atoms in ammonia, by heating benzyl chloride with alcoholic ammonia. Benzyl chloride, which is used as a source of "oil of bitter almonds" ("benzaldehyde") and of benzoic acid, has the formula $C_6H_5.CH_2Cl$, and is obtained by passing chlorine into cold toluene, in direct sunlight. Benzyl alcohol, $C_6H_5.CH_2(OH)$, is the hydrate of benzyl, and is obtained by the action of an alcoholic solution of potash upon benzaldehyde.

**BEOTHUK,** bā'ō-thŭk, a linguistic stock of North American Indians, habitants of the region of the Exploits River in northern Newfoundland, and believed to have been limited to a single tribe. The Beothuks painted their bodies and their property with red ochre, and from this circumstance their stock and tribal name was derived. They were also known as the Goodnight Indians, from the incorrect translation of a Micmac word that sounded like Beothuk. It is not known whether the Beothuks became extinct by reason of wars and famine or by absorption among other tribes. They built very large tepees which they covered with bark or skins and also designed a crescent-shaped canoe. Because of their hostility to the white man, they were relentlessly pursued and hunted until 1820, when the remnant of survivors crossed the straits and hid themselves in Labrador, where it is possible that some of their descendants may survive. In 1911, F. G. Speck came upon an old woman, who claimed to be of Beothuk descent, and from her obtained a few words which he believed indicated Algonquin linguistic stock. Data on the subject, however, are far from decisive.

**BEÖTHY, Zoltán,** Hungarian writer: b. Komorn, 4 Sept. 1848. In 1882 he was appointed professor of æsthetics at the University of Budapest, after he had published several novels and many short stories and some of his critical and dramatic essays. His most important works include a history of Hungarian literature (1877); a history of Hungarian prose fiction (1886); a collection of essays (Budapest 1881). He is considered one of the foremost critics of Hungary.

**BEOWULF,** bā'ō-wŭlf, Anglo-Saxon epic, of great importance as one of the earliest extant pieces of literature in the English language, as a source of information in regard to early manners, customs and traditions, and as an heroic poem of great dignity and beauty. The unique manuscript, now in the British Museum, dates from about 1000, but the composition of the poem must be placed some three centuries earlier. The manuscript, carelessly written by two scribes, is in the West-Saxon dialect, but the original poem must have been composed in the Northumbrian dialect, like most extant Anglo-Saxon poetry, which represents Southern transcription of Northern work. The name of the poet is not known; he was not, in any case, the inventor of the incidents, but rather one who adapted existing material, probably in the form of separate lays, to the ampler frame of the epic.

The plot of the poem is briefly as follows: Hrothgar, King of the Danes, builds a great mead-hall for himself and his warriors. But an evil creature named Grendel, descended from Cain, comes at night and attacks the hall, slaying and devouring Hrothgar's men. Twelve years this continues. Then Beowulf, nephew of Hygelac, King of the Geatas, in the territory which is now southern Sweden, sails to Denmark with 14 warriors to kill the monster. He is entertained magnificently at the Danish court and silences Unferth, the King's chief counsellor, who belittles his courage. When night falls Beowulf watches in the hall, with his thanes. The monster appears and kills one of the men before coming to grips with Beowulf. A fearful struggle ensues, in which the hero tears off the demon's arm, but cannot prevent his escape to his lair. On the following day there is great rejoicing, and magnificent presents are bestowed upon Beowulf. But after night comes on the mother of Grendel, bent upon revenge, bursts into the hall and carries off Æschere, a Danish warrior. Beowulf then seeks out the she-demon in her lair beneath the waters of an inland mere. His sword, loaned him by Unferth, fails him, and he kills the hag with one of her own weapons. He cuts off the head of the dead Grendel and takes it back with him to the court of Hrothgar. After more feasting and present-giving he returns to the land of the Geatas and recounts his adventures at some length to King Hygelac. After the reign of Heardred, the successor of Hygelac, Beowulf himself ascends the throne and reigns gloriously for 50 years. But a

dragon, angered by the plundering of his hoard, devastates the country with fire, whereupon Beowulf attacks and kills him, with the assistance of Wiglaf, a young thane. In this encounter Beowulf is himself mortally wounded and dies. His body is burned on a great funeral pyre, with solemn ceremonies.

This bare outline gives no hint of the wealth of episodes which enrich the poem. The most important of these are the account of Beowulf's swimming feat with Breca of the Brondings; the story of Finn, King of the Frisians, and Hildeburg, his Danish wife; the tale of the betrothal of Hrothgar's daughter Freawaru to Ingeld; and the descriptions of the wars between the Geatas and Swedes. A part of the Finn story is also preserved in the so-called 'Finnsburg Fragment,' 50 lines of verse found in the binding of a book of homilies, and now lost. 'Beowulf,' as is evident, represents the fusion of history and tradition with themes of popular story. Much of what is told of kings and chieftains must be founded upon fact. One event, the death of Hygelac, established by documentary evidence as between 512 and 520 (Gregory of Tours and the 'Gesta Francorum'), serves roughly as a basis for dating the action of the poem. But it is impossible to establish exact chronology for events so highly colored by imagination. The story of Grendel and his dam may be traced in the very widespread popular tale of the 'Bear's Son'; the fight with the dragon, originally quite unconnected with this, attached itself independently to the figure of Beowulf. The material probably took shape in the form of lays in Scandinavian territory, was carried to England, retold there in the vernacular, and finally molded by the «Beowulf-poet» into the present epic about the first quarter of the 8th century. It is impossible, however, to distinguish in the present poem the lays on the basis of which it was composed. The Christian elements, though foreign to the material in its earlier form, are not mere interpolations, but an integral part of the work of the final poet. The tale of Beowulf's troll-fights, living on in Scandinavia after its transference to England, reappears attached to an historical personage in the 'Saga of Grettir the Strong,' with very striking resemblances to the English poem. The other Scandinavian analogues are of less importance. Many attempts have been made to explain the chief events of the epic as a nature-myth, but these are to be regarded with distrust. If a mythological significance was ever attached to these events, which may be doubted, there is no sufficient evidence upon which to base an interpretation.

The poem is written in alliterative long lines, with four strongly emphasized syllables and a varying number of weaker syllables. The style is simple but vigorous. Metaphor, especially in decorative epithets, is frequently used, but simile is rare. The narrative is constantly retarded by repetition and variation, and an understanding of much in the story, especially in the episodes, is rendered difficult by unexplained allusions. The whole is in no sense primitive, but represents highly developed artistry. As a sustained narrative of heroic events, and as an expression of early ideals of courage and devotion to chief and to kin, 'Beowulf' is unrivalled in the vernacular literature of western Europe. Consult the translation by Gummere, F. B., 'The Oldest English Epic,' with its comments and illustrative material, particularly to be recommended.

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**BEPPO**, a satirical poem on Venetian life by Byron, published in 1818, and named for the chief figure. In Auber's opera, 'Fra Diavolo,' is a character of the same name.

**BEPPU**, bĕp'poo, Japan, a bathing place and seaport on the Island of Kiushiu, famed for its hot alkaline baths. It is seven miles by rail from Oita. There is a sanatorium for consumptive railway employees. Beppu is also a port of call for steamers.

**BERANE**, formerly a Turkish town in the vilayet of Kossova, which came into the possession of Serbia after the Balkan wars. After the invasion of Serbia by the Austro-German and Bulgarian armies in 1915 it reverted to the Bulgarians under whose jurisdiction it now is. It was the scene of some of the heaviest fighting between the Turks and the Serbians during the First Balkan War. In October 1912 it was stormed by the Montenegrins and by them occupied. The population is almost entirely Slavic, only a small percentage being Turkish.

**BÉRANGER, Pierre Jean de**, bā-rān-zhā pē-ār zhŏn dĕ, national poet of France: b. Paris, 19 Aug. 1780; d. there, 16 July 1857. His father was a restless and scheming man, and young Béranger, left in a great measure to himself, ran a great chance of spending his life as a gamin and vagabond in the streets of Paris. A few days after the destruction of the bastille he was conveyed to Peronne and placed under the charge of an aunt who kept a tavern, and to whom for a time he acted as waiter. At the age of 14 he was apprenticed to M. Laisnez, a printer in Peronne, but after remaining in that employment for some time, was suddenly summoned to Paris by his father, who wished his assistance. The improvidence and prodigality of his father was constantly involving them in difficulties, and Béranger, with as yet no settled vocation in life, was enduring all the hardships and privation which men of genius in a similar position to himself have frequently had to encounter before the recognition of their talents. He had now, besides making an unsuccessful attempt in the drama, produced a number of poems, including his 'Roger Bontemps,' 'Le Grenier,' 'Les Gueux' and 'Le Vieil Habit.' Some of these were sent by him in 1804 to Lucien Bonaparte, in the hope thereby of obtaining some patronage or assistance. In this, probably the only application he ever made for aid in the course of a long life, Béranger was not disappointed. Lucien sent for him, encouraged him to proceed in his poetical career and made over to him his own income as member of the French Institute. He was afterward employed in editing the *Annales du Musée*, and in 1809 received an appointment as clerk in the office of the secretary to the university. Many of his songs had now become extremely popular and in 1815 the first collection of them was published. A second collection was published in 1821, but

Béranger had made himself extremely obnoxious to the Bourbon government by his satires on the established order of things; and in addition to being dismissed from his office in the university, he was prosecuted and sentenced to three months' imprisonment and a fine of 500 francs. A third collection appeared in 1825, and a fourth in 1828, which last publication subjected him to a second state prosecution, an imprisonment of nine months, and a fine of 10,000 francs. Nothing, however, could daunt his spirit, and in prison he still continued to busy himself in the composition of his songs and lyrical satires upon government. In 1833 he published his fifth and last collection, which contains some of the most powerful effusions of his genius. He was elected to the Constituent Assembly of the Second Republic, took his seat, and soon after resigned. He refused all honors from the Second Empire. The concluding years of his life were spent in a dignified retirement and he received the honor of a public funeral, which the most eminent men of France, both of the world of literature and politics, attended.

The great attraction of Béranger's songs is the unequaled grace and sprightliness which they display, combined with great descriptive powers, much comic humor, and occasional bursts of indignation and invective when some social or political grievance is denounced. They are sometimes also, it must be admitted, marked by a tendency to levity and looseness of morals, but in this respect they partake eminently of the French character. No one, indeed, was more thoroughly French than Béranger, and the glory of his beloved *patrie*, as paramount to all other considerations, appears constantly as the inspiring genius of his poetry. The intense nationality of his songs constitutes one of their principal charms, and in this respect he bears some resemblance to Thomas Moore. He has sometimes been called the Burns of France, but though like him essentially a poet of the people, he falls far beneath the pathos and depth of feeling displayed by the Ayrshire Bard in depicting the passion of love. In private life Béranger was the most amiable and benevolent of men, beloved by his friends alike for his social qualities and kindliness of heart, while his charities were so numerous and extensive as often to exceed the bounds of prudence. Consult Boiteau, Paul, 'Vie de Béranger' (5 vols. 1860-61); Brunetière, 'Poésie lyrique' (Paris 1894); Janin, 'Béranger et son temps' (1866); Sainte-Beuve, 'Portraits contemporains'; Nivalet, 'Souvenirs historiques et étude analytique sur Béranger et son œuvre' (Paris 1892); Peyrat, 'Béranger et Lamennais' (1861).

**BERAR**, bā-rär', India, former commissionership in the Deccan, south and west of the Central Provinces and north of Hyderabad, touching Bombay territory on the west; with an area of 17,766 square miles. It consists chiefly of a fertile plain bordered on the north and south by low ranges of hills. It is intersected by the Purna and is partly bounded north and south by the Wardha and Penganga flowing east to the Godavari. It has a fertile soil, which produces much good cotton and millet, the best wheat in India, as well as oil-seeds and other produce. The rainfall is regular and this province is in the position of being able to export food to other parts of India. It is intersected by the railway from Bombay to Nagpur and ultimately to Howrah, opposite Calcutta. After being ruled by independent sovereigns, it was added in the 17th century to the Mogul empire and latterly became part of the Nizam's dominions (Hyderabad), to which it still in a sense belongs. In 1853 it was assigned or handed over to the British authorities to provide for the payment of the body of troops which the Nizam had been previously bound to furnish in time of war for the Indian government. A new treaty was concluded in 1860 by which certain territorial alterations were brought about and a considerable debt due by the Nizam was canceled. The arrangement continued until 1902, when Berar was leased to the British in perpetuity and it is now attached to the Central Provinces for administrative purposes. The province has greatly prospered under British rule. It consists of six districts: Ellichpur, Amraoti, Akola, Buldana, Basim and Wun. The largest towns are Ellichpur and Amraoti (Oomrawuttee). Pop. (1911) 3,057,162.

**BERARD, bā-rär, Frédéric**, French physician: b. Montpellier, 8 Nov. 1789; d. there, 16 April 1828. When only 20 years of age he wrote a thesis entitled 'Theory of Natural Medicine, or Nature Considered as the True Physician, and the Physician as an Imitator of Nature.' He afterward went to Paris, where he was engaged to write in the 'Dictionary of Medical Science.' In 1816 he returned to Montpellier as professor of therapeutics in a private course of lectures to the medical students of the college. At this period he published a work explanatory of the 'Doctrines of the Medical School of Montpellier.' With Rouzet, he published Dumas' work on 'Chronic Diseases,' with instructive commentaries. In 1823 he also published in Paris his work on 'The Relations of the Physical and the Moral Organism, as a Key to Metaphysics and the Physiology of Mind.' In this he explains his own views of human nature and the principles of life, in opposition to the views of Cabanis. He also took occasion to publish at the same time a manuscript letter of Cabanis on 'Primary or Final Causes,' accompanied by numerous annotations.

**BERAT**, bā-rät', Albania, a town on the river Ergent, the ancient Apsus, and about 30 miles northeast of the seaport of Valona. The valley in which it stands is very fertile, producing large quantities of grain, oil and wine. The town is picturesque and contains several quaint churches and mosques. It is the seat of a pashalic and Greek archbishopric and was taken by Ali Pasha from his rival Ibrahim. Amurath II captured Berat and his troops held it notwithstanding a desperate attempt by Scanderbeg with a strong body of Italian auxiliaries to retake it. Pop. about 15,000, including 5,000 Greeks.

**BERAUD, Jean**, bā-rō, zhŏn, French painter of great power: b. Saint Petersburg, of French parents, 1849. After serving with distinction in the French army during the Franco-Prussian War, he became a pupil of Bonnat. His contributions to the salon began in

1873 and the list of his paintings runs from his Léda (1875) and L'arlequine (1891), through a very large number of portraits, to 'La Madeleine chez le Pharisien.' He was one of the founders of the Société des Beaux-Arts.

**BERBE,** a west African, much-spotted genet (*Germetta pardina*). See GENET.

**BERBER,** town of Nubia, on the right bank of the Nile, below the confluence of the Atbara. It is a station on the route from Khartum to Cairo and a point to which caravans go from Suakin on the Red Sea. It is still of commercial importance, but the opening of a railway line in 1906 to take the place of the caravan route has diverted much of the Red Sea trade elsewhere. In the course of General Graham's operations against Osman Digna in 1885, a railway was projected from Suakin to Berber and the work was actually begun, but was ultimately abandoned when military protection was taken away. Pop. 10,000.

**BERBERA,** the chief port and town of British Somaliland, on the African coast of the Gulf of Aden and about 170 miles south of Aden. It has a small but well-sheltered harbor and a long pier; a European quarter with stone houses and warehouses and a native quarter laid out with broad streets but consisting chiefly of huts or sheds. There is a considerable export trade in the products of the country, such as hides and skins, gums, ostrich feathers, ghee, sheep, goats and cattle; rice, millet, dates, cottons, tobacco, etc., being imported. The traffic is chiefly with Aden. The population is perhaps 5,000, increased to 30,000 during the trading season. The Somali Coast Protectorate extends along the coast for about 400 miles and inland for about 200, the area being about 80,000 square miles. Besides Berbera it contains also the ports of Zeilah and Bulhar. It was acquired in 1884 and is administered by a political agent and a consul. A number of Indian troops are stationed in the territory. The trade is of some importance and is increasing.

**BERBERINE,** a non-poisonous alkaloid discovered by Buchner in 1837 in the root of the common barberry and now known to exist in many other plants also. It crystallizes, ordinarily, in yellow, silky needles, having the composition $C_{20}H_{19}NO_5 + 5\frac{1}{2}H_2O$; but when thrown down from solution in alcohol the needles are said to be red — probably from the absence of water. Berberine forms numerous salts and is used to a considerable extent in medicine, occurring in notable quantities in preparations of hydrastis. The alkaloid itself is soluble in from four to five parts of water at ordinary temperatures and is also moderately soluble in alcohol; but it is only slightly soluble in chloroform and insoluble in ether.

**BERBERIS,** the generic name of the barberry (q.v.).

**BERBERS,** the name of a people spread over nearly the whole of northern Africa. From their name the appellation Barbary is derived. They are considered the most ancient inhabitants of the country. Their different tribes are scattered over the whole space intervening between the shores of the Atlantic and the confines of Egypt; but the different branches of Atlas are their principal abode; while to the south they extend to the Soudan. Chief branches into which they are divided are: First, the Amazirgh, Amazigh, or Mazigh, estimated to number from 2,000,000 to 2,500,000, and who inhabit Morocco. They are for the most part quite independent of the Sultan of Morocco and live partly under chieftains and partly in small republican communities. Second, the Shillooh or Shellakah, who number about 1,450,000, and inhabit the south of Morocco. They practise agriculture and carry on some manufactures. They are more highly civilized than the Amazirgh. Third, the Kabyles in Algeria and Tunis, who are said to number about 1,000,000. Fourth, the Berbers of the Sahara, who inhabit the oases and consequently live for the most part at wide intervals from each other. Among the Sahara Berbers the most remarkable are the Beni-Mezâb and the Tuareg. To these we may also add the Guanches of the Canary Islands, now extinct, but undoubtedly of the same race.

The Berbers generally are about the middle height; their complexion brown, and sometimes almost black, with brown and glossy hair. Individuals of fair complexion and light hair and even with blue eyes are said to be not uncommon among them. They are generally thin, but extremely strong and robust, and their bodies are beautifully formed. The head of the Berber is rounder than that of the Arab and the features shorter, but of an equally marked character, although the fine aquiline nose, so common among the latter, is not often seen among the Berbers. The language of the Berbers is said to have affinities with the Semitic tongues. Such of them as mingle with the Arabs speak or understand Arabic; but those who dwell in the interior of the mountains understand no other language than their own. The Berbers are generally straight and honest in their dealings — contrasting favorably with the Arabs — and of high intelligence. They are Mohammedans in religion. They generally dwell in huts or rude houses, the latter rectangular, with two gable ends, covered with thatch and entered by a low and narrow door. These dwellings are often built in little groups, scattered about in the valleys and upon the sides of the mountains, and in some parts each group of huts is situated in the midst of a plantation, with a portion of ground laid out as a kitchen-garden. Although the Berbers have always lived in ignorance and have had but little connection with civilized nations, they are remarkably industrious. By working the mines in their own mountains they produced lead, copper and iron. With the iron they manufacture gun-barrels, implements of husbandry and many rudely-formed utensils. They understand the manufacture of steel, from which they make knives, swords and other instruments, not very elegant in form, but of good quality. The tribes inhabiting the borders of the plains and some of the great valleys breed sheep and cattle in considerable numbers. Their sheep are small and yield very little wool, and they have numerous herds of goats. Their cows and oxen are of a small species, but their asses and mules are

much esteemed. Consult Randal-Maciver and Wilkin, 'Libyan Notes' (London 1901).

**BERBICE,** bĕr-bēs', a district of British Guiana, intersected by the river Berbice. It extends from the river Abary on the west to Corentyn River on the east, about 150 miles along the coast, the boundary inland not being fixed. The chief town is New Amsterdam; pop. about 10,000. Its citadel, Fort York, and numerous intersecting canals, give it the aspect of a mediæval Dutch town. The principal productions are sugar, rum, cotton, coffee, cocoa and tobacco. The coast is marshy and the air damp. Berbice came finally into British possession in 1815, having previously belonged to the Dutch. Till 1831 it formed a separate colony from Demerara and Essequibo. Pop. about, 52,000. See GUIANA.

**BERBICE,** a river of British Guiana; flows generally northeast into the Atlantic. It rises in lat. 3° N. and flows into the Atlantic in lat. 6° 24' N. Crab Island, at its mouth, divides it into two channels of which the western is from 9 to 16 feet in depth. It is navigable for small vessels for 165 miles from its mouth, but beyond that the rapids are numerous and dangerous.

**BERCHEM,** bĕrH'ĕm, or **BERGHEM, Nikolaas,** Dutch painter: b. Haarlem, 1624; d. there, 18 Feb. 1683. Having studied under his father and Van Goyen, Weenix the elder, and other masters, he spent several years in Italy, where he soon acquired an extraordinary facility of execution. His industry was naturally great and his innumerable landscapes now decorate the best collections of Europe. The leading features of Berchem's works, besides the general happiness of the compositions, are warmth and coloring, a skilful handling of lights and a mastery of perspective. His etchings are also highly esteemed. Consult Buxton and Poynter, 'German, Flemish and Dutch Painting' (1881).

**BERCHET,** bār-shā', **Giovanni,** Italian poet and prose writer: b. Milan, 23 Dec. 1783; d. 1851. He was a friend of Manzoni and Silvio Pellico. About 1819 he became a frequent contributor to a liberal journal at Milan, called the *Conciliatore.* After this was suppressed and its contributors cast into prison or exiled by the Austrian government, Berchet sojourned in England, France and Germany. In 1848 he returned to Italy and during the tenure of office of the provisional government of Milan was Minister of Public Instruction. At the time of his death he was a member of the Sardinian Parliament. His writings include 'Poesie'; 'Profugi di Praga'; 'Romanze'; 'Fantasie' (1829). His collected poems appeared in Milan in 1863, with biographical sketch; and more recently were edited by E. Bellorini (Bari, 1911–12).

**BERCHTA,** bĕrH'tą, a female hobgoblin, in the folklore of southern Germany and Switzerland, of whom naughty children are much afraid. Her name is connected with the word bright and originally she was regarded as a goddess of benign influence. She is the patroness of spinners. The last day of the year is kept in her honor and a special meagre fare — gruel, pottage and fish — must be eaten on that day to the exclusion of other foods. Dire penalties are imposed on those who disregard those injunctions. In certain localities Berchta is represented as queen of the crickets, with a long iron nose and a very large foot. Numerous springs in Salzburg and elsewhere are named after her, indicating that she once was worshipped in those localities. In the course of the centuries many of the sagas of Berchta came to be attributed to the Berthas of history. Many legends of a lady who appears at night in great houses, garbed in white, and nurses the children and acts generally as their guardian, are no doubt traceable to the ancient heathen Berchta. Consult article by E. Mogk in Paul's 'Grundriss der germanischen Philologie' (Vol. III, p. 278).

**BERCHTESGADEN,** berH-tĕs-gä'dĕn, Bavaria, village situated in a most picturesque and much-visited region, about 12 miles south of Salzburg, on the Achen, or Alm, a stream which issues from the beautiful lake called the Königssee. It lies on a mountain slope surrounded by meadows and trees, consists of well-built houses, and has a fine old abbey, now a roval residence; the abbey church, with fine Romanesque transepts of the 12th century; a royal villa, etc. Wood-carving is extensively carried on and there is an important salt mine. It is the principal settlement in the district of the same name. It has a reputation as a tourist resort. Pop. about 3,000.

**BERCHTOLD, Count,** Austro-Hungarian Foreign Minister 1912–15: b. 18 April 1863. Anton Johann Sigismund Josef Korsinus, Graf Berchtold, is one of the largest landed proprietors in the Dual Monarchy; he married, 1893, the Countess Fernandine Károlyi von Nagy-Károly. Whatever may be the verdict of history upon the great European War that broke out in 1914, to Count Berchtold belongs the distinction of having applied the actual match that set the world ablaze, namely, the declaration of war against Serbia. It would be unjust, however, to lay more than a theoretical responsibility for that act upon his own shoulders: he was the instrument rather than the cause. He began his official career in a minor administrative capacity at Brünn and afterward became a secretary in the foreign office in Vienna. In 1895 he was appointed secretary at the embassy in Paris; councillor of embassy in London 1899; at Saint Petersburg (Petrograd) in 1903, and Ambassador to Russia in 1906. On the death of Count Aehrenthal (q.v.) he became Foreign Minister of the Dual Monarchy, 19 Feb. 1912, thus inheriting the aggressive and not over-scrupulous foreign policy of his predecessors. Before accepting the office Count Berchtold gave up his Austrian in favor of his Hungarian nationality. It cannot be truly said of him that he practised the Aehrenthal method of tortuous policy; a simple country gentleman — although a diplomat — he brought the instincts of a gentleman into a department organized on a highly efficient but thoroughly unscrupulous basis. He held no pronounced political tendencies, but he was surrounded by a number of subordinates in whom the worst traditions of Austrian diplomacy seemed to have been incorporated. They soon became his masters and obliged him to pursue a policy

over which he had practically no control. During his earlier tenure of office the best augury of peace, it was thought, lay in his personal friendship for M. Sazonoff, the Russian foreign minister. He also cultivated friendly relations with Italy, and succeeded at Rome in removing the unfavorable impressions created by Aehrenthal's policy. His own efforts notwithstanding, he became a respectable figurehead for the aggressive and dishonest policy which his government pursued throughout the Balkan Wars (q.v.) of 1912–13, down to the outbreak of the European War. The tool of the military and clerical sections of the state, he prepared for an attack on Serbia in conformity with their designs. At the instigation of Count Tisza, the Hungarian premier, Count Berchtold prompted the Bulgarian attack on Serbia after the end of the first Balkan War and the signing of the Treaty of London. It was expected that the Bulgarians would vanquish the Serbs and that the latter would thereby become an easy prey to Austria-Hungary and open the road to Salonica. But the scheme was defeated by the Serbian victories over the Bulgarians in June 1913. No sooner was the second Balkan War closed by the Treaty of Bucharest than Austria-Hungary demanded a revision of the treaty and Count Berchtold proposed to Italy to undertake an offensive war against Serbia on the pretext that it would be in reality a defensive war against the danger of a Greater Serbia to Austria-Hungary. The Italian government, however, declined to recognize the proposal as entering within the terms of the alliance, the undertaking being aggressive, and not defensive. The action of Italy thus postponed the attack on Serbia for a year, when an excellent opportunity presented itself.

The assassination of the Austrian heir and his wife gave the military and clerical parties the pretext they had long sought. In agreement with Berlin it was decided to use the occasion for an attack on Serbia, an act which precipitated the great conflict. It must be asserted that the charge of duplicity has never been leveled at Count Berchtold. Upright and conscientious, weak and vacillating, he was unfitted to guide the affairs of the state in stormy and critical times. The published correspondence of the British Ambassador and others clearly indicates that in his personal relations with his colleagues Count Berchtold pursued direct and simple courses, and that the blame for the devious Austrian policy with regard to Serbia and Russia rests rather upon Berlin and the German Ambassador in Vienna, the late Herr von Tschirscky (q.v.), than upon the Count himself. He tendered his resignation more than once, but it was not accepted by the Emperor Francis Joseph till January 1915, when Baron Burian succeeded him as Foreign Minister. In February 1917, Count Berchtold was appointed Chief Chamberlain of the Austro-Hungarian Court. He comes of an old Moravian family, one that has intermarried in the most exclusive ranks of the nobility. See WAR, EUROPEAN.

**BERCK**, bärk, France, a fishing village of the department of Pas-de-Calais, on the English Channel, 28 miles south of Boulogne. A mile distant is Berck-Plage, a summer bathing resort. The latter has an excellent beach, a Kursaal and two hospitals for children. Pop. (1911) 11,597.

**BERCKHEYDE**, bĕrk'hī-dĕ, **Gerrit**, Dutch painter: b. Haarlem, 1638; d. 1698. He was a younger brother of Job Berckheyde and with him was employed at the court of the Elector Palatine. Gerrit studied under Jacob Dewet. He traveled the Rhine country, painting at Cologne and Heidelberg. He became a member of the Guild of Haarlem in 1654 and there he remained with his brother until his death. His architectural works are regarded as the best of their kind. Of these the Bourse of Amsterdam was a favorite (Amsterdam Museum, Rotterdam, Frankfort, Brussels), and the church of Saint Bavon in Haarlem. Other important works are 'View of Amsterdam,' 'View of Cologne,' 'View of Heidelberg Castle.' Among his celebrated genre subjects are 'At Breakfast' (Schwerin), 'Soldiers on Guard' (Dessau) and 'A Courtesan's Room' (Rotterdam). His elder brother, JOB, b. 1630; d. 1693; was a more prolific artist, but confined himself to street scenes and civic centres of cities. He was more popular than his brother in his day but time has reversed this judgment and proclaimed Gerrit the greater artist.

**BERDIANSK**, bĕr-dyänsk', a seaport of southern Russia, in the government of Taurida, on the northern shore of the Sea of Azof. It contains many handsome houses, arranged in spacious streets, and has a good anchorage, sheltered on all sides except the south. It is the chief entrepôt for the surrounding governments, and exports large quantities of grain, oil-seeds, and wool. It has also a large inland trade in wood, coal, fish and salt, the last obtained from apparently inexhaustible mines in the vicinity. It is also the centre of a district in which the manufacture of agricultural implements and machines is extensively carried on. There are three churches, a gymnasium and a seminary for teachers. Pop. 29,000.

**BERDITCHEV**, bĕr-dę'chĕf, city of European Russia, in the government and 129 miles southwest of Kiev. It is an ill-built place, mainly Jewish, but contains several churches and synagogues, and a large Carmelite convent, in the church of which is an image of the Virgin Mary, the object of pilgrimages. It carries on a considerable trade in corn, wine, cattle, honey, wax and leather. It is famous for its four annual fairs. At these, cattle, corn, country produce, carriages and harness are sold in large quantities. The principal manufactures include tobacco, oil products and leather. The population in 1910 was 76,896, including many Jews. The town is the private property of Count Tishkevitch. It has figured prominently in the many conflicts between the Poles, the Cossacks and the Russians.

**BEREA**, Ky., town in Madison County; on the Louisville & N. Railroad, 35 miles southeast of Lexington. It is the centre of a large agricultural section and is the seat of Berea College (q.v.), founded in 1855. Besides the college buildings and chapel it contains a Carnegie library and a stave factory. The waterworks and electric light works are owned by the college. Pop. 1,510.

**BEREA**, Ohio, a village in Cuyahoga County, on the Big Four, L. S. & M. S., and the C. L. & W. division of the B. & O. Railroads, 14 miles southwest from the centre of Cleveland, with which, and Elyria and Oberlin, it is connected by electric lines. It was founded in 1829. The village is lighted by natural gas and electricity; it has extensive quarries of sandstone (Berea grit); a foundry and nut and bolt works, and manufactories of toys, grindstones, pumps and torpedoes. There are two banks. Berea is the seat of Baldwin University, German Wallace College (both Methodist Episcopal), and a German orphan asylum. The assessed property valuation is $1,625,000. Pop. 2,609.

**BEREA COLLEGE**, a co-educational, nonsectarian institution, in Berea, Ky.; organized in 1855. It has 96 members in its faculty, and some 1,668 students. Its building and grounds are valued at $971,722, and its library contains 29,000 volumes. The distinguishing feature of the college is its work in the southern mountain region, where it carries on, through traveling libraries, social settlements, and lectures, a very valuable kind of university extension.

**BEREA GRIT**, a variety of sandstone, great deposits of which are found at Berea, Ohio. It is of Mississippian age, lying next above the Bedford limestone. It is widely famous for its evenness of texture, and color, and exemption from the impurities that would deteriorate its marketable value.

**BEREANS**, in modern Church history an almost extinct sect of dissenters from the Church of Scotland, founded by Rev. John Barclay (1734–98) in 1773. From the founder's name they are sometimes called Barclayans. They take their title from, and profess to follow the example of, the ancient Bereans (Acts xvii, 10–13) in building their system of faith and practice upon the Scriptures alone, without regard to any human authority whatever. They agree with the great majority of Christians, both Protestants and Roman Catholics, respecting the doctrine of the Trinity, which they hold as a fundamental article of the Christian faith; but differ from the majority of all sects of Christians in various other important particulars. For instance, they say that the majority of professed Christians stumble at the very threshold of revelation by admitting the doctrine of natural religion, natural conscience, etc., not founded upon revelation or derived from it by tradition. With regard to faith in Christ, they insist, that as faith is the gift of God alone, so the person to whom it is given is as conscious of possessing it as the being to whom God gives life is of being alive, and therefore he entertains no doubts either of his faith or his consequent salvation through the merits of Christ, who died and rose again for that purpose. Consistently with the above definition of faith, they say that the sin against the Holy Ghost is simply unbelief. Their mode of practice and Church government differs but little from those of many other dissenting sects. See BARCLAY, JOHN.

**BERENDT**, bā'rent, **Karl Hermann**, German ethnologist: b. Dantzic, 1817; d. 1878. After studying medicine at Königsberg he began to practise in Breslau, where he lectured in the university. In 1851 his political attitude during the revolution having made his stay in Germany hazardous, he went to Nicaragua and thence to Vera Cruz, where he devoted some years to ethnological study and research. He retired from the practice of medicine and gave his whole attention to the study of the ethnology and linguistics of the Mayas. He came to the United States in 1863 and soon after was sent to Yucatan by the Smithsonian Institution, which published the results of his investigations in its report of 1867. In 1869 he explored the ruins of Ceutla, Tabasco, Mexico, and went to Guatemala in 1874, where he settled in Coban, began the cultivation of tobacco and studied the Mayan dialects. He published 'Analytical Alphabet of the Mexican and Central American Languages' (1869); 'Los escritos de Don Joaquin Garcia Icazbalceta' (1870); 'Los trabajos linguisticos de Don Pio Perez' (1871); 'Cartilla en lengua Maya' (1871); 'Los indigenas de la América central y sus idiomas' (1878).

**BERENGAR**, bā'rĕn-gär, two kings of Italy in the 9th and 10th centuries. BERENGAR I, son of the Duke of Friuli by a daughter of Louis-le-Debonnaire, during the confusion which followed on the dissolution of the empire of Charlemagne, laid down the crown of Italy, and after a civil war obtained it in 888. At a later period, having been invited by Pope John X to repel the Saracens who were devastating the south of Italy, he was crowned emperor of Rome (915). His warlike expeditions had generally been fortunate, and his internal government was generally acceptable to his subjects; but his nobility, jealous of his authority, stirred up a new competitor for the throne in the person of Rudolf II, who invaded Italy in 921, and ultimately obliged Berengar to take refuge in Verona, where he was assassinated in 924. BERENGAR II, grandson of BERENGAR I, was at first Count of Ivrea, while the throne of Italy was occupied by Hugo, count of Provence, a tyrant who had incurred the enmity of almost all the great feudal lords of the kingdom. Berengar taking advantage of this feeling, put himself at the head of a force collected in Germany in 945, and was almost universally welcomed. Hugo abdicated in favor of his son Lothario, who reigned nominally for a few years, and was succeeded in 950 by Berengar, in whom all the powers of the government had previously centred. A quarrel with the Emperor Otho in the following year deprived him of his throne, but he was permitted to resume it on agreeing to acknowledge Otho as his liege lord. In a second quarrel he was not allowed to escape so easily. After losing his territories he shut himself up in the fortress of Saint Leo, and defended himself bravely till famine compelled him to submit. He was imprisoned at Bamberg and died there in 966.

**BERENGARIA**, bā-rĕn-gā'rĭ-ą, the queen of Richard I of England: d. Le Mans, about 1230. She was a daughter of Sancho VI of Navarre and was married to Richard at Limasol in Cyprus, 12 May 1191. She remained at Acre while the king was warring with the Saracens and resided in Poitou during his imprisonment in Germany. She became estranged from him soon after his release and seems

never to have joined him again. She was buried at Espan in the Church of Pietas Dei, which she had founded. Tradition says she was of remarkable beauty and was highly accomplished for her age.

**BERENGARIO, Jacopo,** Italian anatomist: b. Carpi, about 1470; d. Ferrara 1530. He studied at Bologna, taught anatomy and surgery at Pavia, and finally settled at Bologna till a clamor caused by a rumor that he had got possession of two Spaniards affected by a loathsome disease, and was intending to dissect them alive, obliged him to retire to Ferrara. This rumor, caused doubtless by the fact that Berengario looked upon the dissection of the human body as the only means by which the science of anatomy could be advanced, points out the source of the many important discoveries which he made, and the others for which he paved the way, leaving them to be followed out by Vesalius, Eustachius, and Fallopius. He is justly regarded as one of the principal founders of modern anatomy. He was also a dexterous operator, and published a practical work entitled, 'De Cranii Fractura' and another which marked out the path for the anatomical discoveries of the 16th century, 'Isagogæ breves perlucidæ et uberrimæ in anatomiam corporis humani, ad morum scholasticorum preces in lucem editae, cum aliquot figuris anatomicis' (Bologna 1514; Strassburg 1530).

**BERENGARIUS OF TOURS,** French theologian: b. Tours, about 1000; d. 6 Jan. 1088. He is renowned for his philosophical acuteness as one of the scholastic writers. While admitting the real presence of Christ in the Eucharist, he questioned the doctrine of transubstantiation and held that the substance of bread and of wine continued to exist with the body and blood of Christ (consubstantiation). He was condemned by several councils and several times recanted, but died fully reconciled with the Church. He is the first in theological history to call the doctrine of transubstantiation in question. He was treated with forbearance by Gregory VII, but the scholastics belonging to the party of Lanfranc, Archbishop of Canterbury, were irritated against him to such a degree that he retired to the Isle of Saint Cosmas, in the neighborhood of Tours, in the year 1080, where he closed his life in pious exercises. On the history of this controversy, which has long occupied the attention of theologians, new light was shed by Lessing in his 'Berengar' (1770), and also by Stäudlin, who likewise published the work of Berengarius against Lanfranc. This Berengarius must not be confounded with Peter Berenger of Poitiers, who wrote a defense of his instructor Abelard.

**BERENGER,** bā-răn-zhā, **René,** French criminologist: b. Bourgles Valence (Drome), 22 April 1830; d. 30 Aug. 1915. He was a soldier during the War of 1870 and was wounded at the battle of Nuits. The following year he was elected deputy to the National Assembly; and in 1873 he became Minister of Public Works in the cabinet of M. Thiers and national senator in 1875. He was vice-president of the senate from 1891 to 1897. He was founder and president of a number of societies established for the general improvement of the conditions of society, and the eradication of vice from the streets of Paris. He instituted a campaign against the white slave traffic and headed an association for the protection of young girls and women from the dangers and vices of the great modern city. His studies of the vicious conditions of the great centres of population and his bold attempts to find remedies for them have made him one of the foremost workers in this field. The Legion of Honor and many other honors and decorations have been bestowed on him.

**BERENHORST, Georg Heinrich,** German military writer: b. 1733; d. 1814. He was one of the first writers by whom the military art has been founded on clear and certain principles. He was a natural son of Prince Leopold of Dessau, and in 1760 became the adjutant of Frederick II. He was the author of 'Reflections on the Military Art' (Leipzig 1797).

**BERENICE,** bĕr-ę-nī'sę ("a bringer of victory"). (1) This was the name of the wife of Mithridates the Great, king of Pontus. Her husband, when vanquished by Lucullus, caused her to be put to death (about the year 71 B.C.), lest she should fall into the hands of his enemies. (2) The wife of Herod, brother to the great Agrippa, her father, at whose request Herod was made king of Chalcis by the Emperor Claudius, but soon died. In spite of her dissolute life, she insinuated herself into the favor of the Emperor Vespasian and his son Titus. The latter was at one time on the point of marrying her. (3) The wife of Ptolemy Euergetes; who loved her husband with rare tenderness, and when he went to war in Syria made a vow to devote her beautiful hair to the gods if he returned safe. Upon his return Berenice performed her vow in the temple of Venus. Soon after the hair was missed, and the astronomer Conon of Samos declared that the gods had transferred it to the skies as a constellation. From this circumstance the constellation near the tail of the Lion is called *Coma Berenices* (the hair of Berenice).

**BERENICE,** Egypt, a city on the Red Sea, whence a road, 258 miles in length, extended across the desert to Coptos, on the Nile. This road was constructed in the reign of the second Ptolemy. Berenice was one of the principal centres by which the trade of Egypt, under the Macedonian dynasty, and that of the Romans subsequently, were carried on with the remote East. During the Roman period, a sum equal to $2,000,000 is said to have been annually remitted to the East by the Roman merchants as payment for its precious products, which sold at Rome for a hundred-fold more than their original price. Nothing now remains of Berenice but a heap of ruins, adjoining the modern port. The modern town is called Sikket Bender-el-Kebir, and now, owing to the formation of a sand bar at the entrance of the harbor and the filling up of the harbor itself, the port is practically accessible only to small boats. BERENICE, or Hesperis, a city of Cyrenaica, near which the ancients imagined the gardens of the Hesperides to be situated.

**BERENSON, Bernhard,** American art-critic: b. Vilna, Russia, 26 June 1865. He was brought to America as a child, received his

education in Boston, and graduated from Harvard in 1887. He went abroad shortly afterward, having already decided on his life work. Since that time he has resided principally at Settigano near Florence, Italy, making journeys to the various parts of Europe where works of art needed for his studies are to be seen, and returning to America from time to time. He has been influential in obtaining many important works for American collections and is generally regarded as the most significant figure in art criticism that this country has produced. Indeed he is to be placed with the very front rank of European connoisseurs, especially in his own specialty of Italian art. An interesting fact about his study of the great figures of the Florentine Renaissance is that it brought to him an early realization of the quality and importance of the modern French painters like Cézanne and Degas. Outside of articles in nearly all the great reviews of Europe and America, his principal writings are 'Venetian Painters of the Renaissance' (1894); 'Lorenzo Lotto, an Essay in Constructive Criticism' (1895–1901); 'Florentine Painters of the Renaissance' (1896); 'Central Italian Painters of the Renaissance' (1897); 'The Study and Criticism of Italian Art' (1901; 2d series 1902); 'The Drawings of the Florentine Painters' (1903); 'North Italian Painters of the Renaissance' (1907); 'A Sienese Painter of the Franciscan Legend' (1909); 'Catalogue of the Italian Paintings in the John G. Johnson Collection now at Philadelphia' (1913); 'Venetian Painting in America: the Fifteenth Century.' Mr. Berenson's method in the study of ancient works is largely a continuation of the one inaugurated by the Italian critic Giovanni Morelli. Mrs. Bernhard Berenson is also deeply interested in art criticism and has written a guide book on the most important Italian pictures for students to see.

**BERESFORD,** Lord, British admiral: b. Ireland, 10 Feb. 1846. Charles William de la Poer Beresford, second son of the 4th marquis of Waterford, was for many years known by his courtesy title of "Lord Charles." On his elevation to the peerage in 1916 he adopted the title of Baron Beresford of Metemmeh and of Curraghmore. He entered the navy in 1859 and rose rapidly through all grades by force of a strong personality, a fiery enthusiasm in his work and a reckless courage that made him the idol of his comrades. On three occasions he sprang overboard at sea to the rescue of drowning men. He commanded the gunboat *Condor* during the bombardment of Alexandria in 1882. By running his vessel close under the forts he succeeded in silencing the most formidable battery opposed to the British squadron. After the landing of troops he organized an efficient police force for the protection of the city, and later served on Lord Wolseley's staff in the Nile Expedition (1884–85), and subsequently commanded the naval brigade in the battles of Abu Klea, Abu Kru and Metemmeh. For the second time he was specially commended for gallantry. He was in command of the expedition which rescued Sir Charles Wilson's party in the *Safia*, when her boilers were repaired under fierce fire. For this action he received the thanks of both Houses of Parliament. He was a lord commissioner of the admiralty from 1886 to 1888, when he resigned, owing to what he regarded as inadequate provision for the needs of the fleet. In 1893–96 he commanded the naval reserve at Chatham; was commander-in-chief of the Mediterranean squadron 1905–07; of the Channel fleet in 1907–09, and retired from the navy in 1911. He was a persistent critic of the administration of Sir John (now Lord) Fisher while the latter was First Sea Lord. Beresford's book, 'The Betrayal,' issued in 1912, was withdrawn by request of the government. It led, however, to the formation of an Imperial naval war staff. At various times Beresford sat in Parliament for different constituencies; his last one, Portsmouth, he represented till 1916. In the House he was nicknamed the "stormy petrel" and "M.P. for the Navy." Like Lord Roberts, he was one of the few British public men who foresaw a gigantic conflict in the not distant future, and openly proclaimed it on every possible occasion. As the one spent 10 years in pleading for a powerful army with which to face the coming storm, so the other at all seasons insisted on the maintenance of the "two-power standard" for the navy, propounding the fundamental truth that battleships are cheaper than battles. Already in 1905 he wrote, "Great Britain must watch the activity of the German Navy League with the greatest attention." Early in the war Lord Beresford was appointed honorable colonel of the Marine Brigade in the Royal naval division organized for land service. In a letter to the president of the American Navy League Lord Beresford expressed the opinion that Germany could have won the war had she promptly attacked British commerce without any declarations of war (New York *Evening Sun*, 30 Oct. 1916). In 1898 he visited China at the request of the Associated Chambers of Commerce of Great Britain to make a study of the complicated commercial conditions existing there; and on his return, in 1899, he passed through the United States and was received with distinguished honors by official and commercial bodies. He has done much to promote the "open door" policy in China. His publications include 'Nelson and His Times'; 'The Break-Up of China' (1899), and a volume of 'Memories' (1914).

**BERESFORD, William Carr,** Viscount, English general, was a natural son of the 1st marquis of Waterford: b. 2 Oct. 1768; d. Bedgebury Park, Kent, 8 Jan. 1854. He entered the army and served at Toulon and in Corsica, in the West Indies under Abercromby, in Egypt under Baird and commanded the first brigade at the capture of Cape of Good Hope in 1805. In 1806 he was raised to the rank of brigadier-general and the same year commanded the land force in the expedition to and capture of Buenos Aires, but on its surrender soon after was imprisoned for six months before he made his escape. Having been ordered to Portugal in 1808, he was intrusted there with the remodeling of the Portuguese army — an office which he accomplished with great success, and in acknowledgment of his services was created a Marshal of Portugal, Duke of Elvas and Marquis of Santo Campo. He covered Moore's retreat at Coruña in 1809 and subsequently took part in the siege of Badajoz and the battles of Albuera, where he

had very heavy losses, Vittoria and Bayonne. For his bravery at the battle of Toulouse he was raised to the peerage, with the title of Baron Beresford, afterward superseded by that of Viscount Beresford, conferred on him in 1823. In political principles he was a high Conservative and a thorough supporter of the Duke of Wellington. In 1828, when the Duke became premier, he was made master-general of the ordnance, a post he held till 1830.

**BERESFORD,** S. Dak., town in Union County, on the Chicago and Northwestern Railroad, 20 miles northwest of Sioux City. It has a few local industries, three banks and a public high school. It has a good trade in the agricultural products of the region. The value of its taxable property is estimated at $948,000. Pop. 1,400.

**BEREZIN,** byĕr-yĕ-zēn', **Ilya Nikolayevitch,** Russian Orientalist: b. 1818; d. 1896. He studied oriental philology at the University of Kazan, where in 1846 he was appointed professor, and in 1855 became professor of Turkish at the University of Saint Petersburg. Some of his important works in Russian are 'Library of Oriental Authors' (1849–51); 'Tour Through Daghestan and Trans-Caucasia' (1850); 'A Grammar of the Persian Language' (1853); 'The Mongol Invasion of Russia' (1852–54); 'Popular Turkish Sayings' (1857). He wrote in French 'Recherches sur les dialectes Musulmans' (1848–53), and edited the 'Russian Encyclopedic Dictionary' in 16 volumes.

**BEREZINA,** byĕr-yĕ-zę-na', a river in the Russian province of Minsk, a tributary of the Dnieper, with a course of some 335 miles. A canal system connects with the Dwina. It was rendered famous by the passage of the French army under Napoleon, 26–27 Nov. 1812. Admiral Tchitchakoff, with the Moldavian army, forced his way from the south to join the main army, which, after Borizoff had been retaken, was to assist the army led by Wittgenstein from the Dwina and in this manner cut off Napoleon from the Vistula. Napoleon in face of armies three times as strong as his own and surrounding him on all sides, was obliged to make the greatest efforts to reach Minsk, or at least the Berezina, and to pass it earlier than the Russians. After the advanced guard of the Moldavian army had been repelled to Borizoff by Oudinot and the bridge there been burned by them, early in the morning of 26 November, two bridges were built near Sembin, about two miles above Borizoff, an undertaking the more difficult because both banks of the river were bordered by extensive morasses, covered, like the river itself, with ice not sufficiently strong to afford passage to the army, while other passes were already threatened by the Russians. Scarcely had a few corps effected their passage, when the greater part of the army, unarmed and in confusion, rushed in crowds upon the bridges. Those who could not hope to escape over the bridges sought their safety on the floating ice of the Berezina, where most of them perished, while many others were crowded into the river by their comrades. Besides the multitudes who were obliged to remain beyond the Berezina, the division of Bartouneaux, which formed the rear-guard, was also lost. It was intrusted with the charge of burning the bridges in its rear, but it fell into the hands of the enemy. The French lost half their total strength, which stood at 25,000 men. The genius of Napoleon saved the remnant, a broken and dispirited force.

**BEREZOV,** byĕr-yā'zōf (the town of birch trees), Siberia, a town in the government of, and 400 miles north from, Tobolsk, on a height above the left bank of the Sosva, one of the branches of the Obi. Its inhabitants are chiefly Cossacks, who subsist by the chase and by fishing; they barter furs, skins, fish, etc., for flour, flesh-meat, tobacco, ironware and brandy brought by the Tobolsk dealers, whose craft are floated down the Irtish. It lies in a rough country, covered with thick forests, and has a severe climate. Among the noted personages exiled to this place were Prince Menzikoff, the favorite of Peter the Great, who died here in 1729, and Dolgoruki. Pop. about 1,100.

**BERG,** bĕrg, **Friedrich Wilhelm Rembert,** (generally known as FEODOR FEODOROVITCH BERG), Russian general and administrator: b. Sagnitz, Livonia, 27 May 1794; d. Saint Petersburg, 18 Jan. 1874. He received his education at the University of Dorpat and entered a regiment of infantry at Libau. He took part in the campaigns of 1812, 1813 and 1814 in Russia, Germany and France. After his return to Russia he entered the diplomatic service and was successively attaché at the embassies of Munich, Rome and Naples. In 1822 he re-entered active service, directed some expeditions against the Kirghizes and explored the shores of the Sea of Aral. On the accession of Nicholas, Berg was appointed imperial chamberlain and was attaché at Constantinople. During the Turkish campaign he was quartermaster of the Second Army, directed the operations before Silistria and crossed the Balkans. He arranged the map of a portion of Rumania and the Balkans. In 1831 he served in Poland under Rudigier and distinguished himself at Ostrolenka and at the capture of Warsaw. He was appointed lieutenant-general and was afterward in charge of geodetic surveys and of various diplomatic and military missions. In 1849, at Vienna, he prepared the plan of campaign against Hungary. In 1853 he was in charge of the troops destined for the defense of Esthonia and he put the fortress of Reval in a state of defense sufficient to withstand and repulse the attack by the English troops. In 1854 he was made governor-general of Finland and repulsed Admiral Dundas before Sveaborg. Alexander II bestowed on him the title of count and, in 1863, placed him at the head of the kingdom of Poland. He brought this country under submission and retained this post until his death. He was the first to insist on the policy of Russification at all costs. The severity with which he treated the Polish population during the insurrection aroused widespread indignation.

**BERG, Joseph Frederick,** American clergyman: b. Antigua, W. I., 3 June 1812; d. New Brunswick, N. J., 20 July 1871. He came to the United States in 1825, entered the German Reformed ministry, in which he served 1835–52, and then entered the Dutch Reformed

Church and was professor of theology in the Dutch Reformed Theological Seminary at New Brunswick from 1861 till his death. He was distinguished for the intensity of his opposition to the Roman Catholic Church, on which theme he wrote extensively, his best-known work being 'Synopsis of the Moral Theology of Peter Dens, as Prepared for Romish Seminaries and Students of Theology' (Philadelphia 1842; new ed., 1856). His learning was extensive and he was an eminent controversialist. Consult Corwin, 'Manual of the Reformed Church in America' (New York 1879).

**BERG**, an ancient duchy of Germany, now included in the governments Arnsberg, Cologne, and Düsseldorf. It extended along the Rhine from the Ruhr to the frontiers of Nassau, and is everywhere hilly. It is more a manufacturing than an agricultural district, and has long been famed for its minerals, which include iron of the finest quality, lead, copper, zinc and the precious metals. In addition to the employment furnished by the working of these minerals, the inhabitants, who are very industrious, have with considerable success superadded textile manufactures. It is now indeed the chief manufacturing district in Germany, and the most densely peopled. It contains the important towns of Elberfeld and Barmen. The duchy of Berg, founded in 1389, had been long consolidated with the Prussian dominions when (1806) Napoleon revived the title, and conferred it, with an enlarged territory, on Murat. On Murat's receiving the kingdom of Naples, Napoleon named his nephew Louis Napoleon (brother of Napoleon III) hereditary Grand-duke of Berg, and increased its limits still farther. At the Congress of Vienna, in 1815, the whole was given to the King of Prussia.

**BERGAIGNE, Abel**, French Orientalist: b. Vimy, 31 Aug. 1838; d. 6 Aug. 1888. He was for many years professor of Sanskrit at the Sorbonne in Paris. As a Sanskrit philologist he is considered a foremost authority and he was especially noted for the share he took in the interpretation of the Vedas. Among his works are 'La religion védique' (3 vols., Paris 1883); and a translation of two Sanskrit dramas 'Nâgânanda' (Paris 1879), and 'Sacountalâ' (Paris 1884).

**BERGAMA**, bĕr'gą-mą, Asia Minor, town about 20 miles inland from the west coast, on the Selinus, a tributary of the Caïcus, 46 miles north by east of Smyrna. It occupies the site of the ancient Pergamus (q.v.), and contains numerous remains attesting its ancient magnificence. In the centre are the remains of a large Roman basilica, a Byzantine church now converted into a mosque, and a curious double tunnel 200 yards long through which the river runs. To the east of the town is a steep hill with the acropolis and the remains of a Roman palace on the top. To the west of the town are the ruins of the ancient amphitheatre with arches of fine workmanship. It was built so that the arena could be flooded with water from a stream, thus affording an opportunity for nautical sports. Bergama is a flourishing town noted for its manufactures of morocco leather. There is trade also in wool, cotton, and opium. The population is about 7,500, including a number of Greeks, who have established excellent schools.

**BERGAMI, Bartolommeo.** The celebrated trial of Queen Caroline, wife of George IV of England, was principally founded upon a charge of adulterous intercourse with Bergami, who, in 1814, upon recommendation of the Marquis Ghislieri, in whose previous employment he had been, was attached to her household. Bergami, who had fought his way up in the Italian army from a common soldier to the rank of quartermaster, belonged to a respectable family, and the Marquis Ghislieri described him to the queen as a person of character and attainments superior to his condition, and bespoke for him a kind treatment. This, and the personal advantages of Bergami, who was singularly good-looking, combining athletic strength and stature with almost feminine beauty, naturally disposed the queen in his favor. Moreover, he was full of loyalty and devotion, and on one occasion nearly became the victim of poison intended for her. The queen treated his whole family, especially a little child of his, with the greatest generosity and kindness. All these circumstances were used by her enemies as so many indications of her criminality, and during the trial one of the Italian witnesses, Teodore Majocchi, excited special indignation by his admitting every fact unfavorable to the queen, and by answering every question which might tell in her favor with *Non mi ricordo.* Bergami, who was at Pesaro during the trial, exclaimed, when he was apprised of her acquittal, but at the same time of her death, that she had been poisoned, and never could be convinced to the contrary. To the last he ever spoke of the queen with the greatest reverence and affection, and his deportment before and after her death led to the conclusion that he looked upon her rather as a benefactress than as a mistress. However, wherever he went he became the observed of all observers. During his occasional excursions to Paris his apartments were crowded with visitors, consisting principally of ladies, who, under the pretext of having been friends of Queen Caroline, gratified their curiosity and obtained an interview with the portly courier. When at home he lived in great splendor; in the capitals of Italy, Rome, Naples, Milan, he was a lion, and the houses of "the best families" were open to him. At the time of the trial many different statesments about Bergami's character were circulated in the House of Lords, but however contradictory in many other respects, they all agreed in this one fact, that he was as inoffensive as he was good-looking a person, who probably would never have been heard of beyond the precincts of Italian barracks if it had not been for his relation with Queen Caroline, and for the peculiar construction which was put upon it by her enemies at the trial. His name in England was, by a curious mistake, spelled with a P.

**BERGAMO**, bĕr'gą-mō, Italy, city and capital of the province of Bergamo, situated in the district lying between the rivers Brembo and Serio, and 33 miles northeast of Milan. It consists of two distinct portions, the upper city, situated on hills, and now attainable by a cable tramway, and the lower city. Città Alta, with its hilly streets, ancient buildings, and lofty

ramparts, now transformed into promenades, has a picturesque mediæval appearance. The much more extensive new quarters in the plain are very modern in every respect. At its fair goods to the value of a million sterling have sometimes been sold. It has an academy of painting and sculpture, a museum, an athenæum, a public library, several secondary schools, and various manufactories. There is a cathedral but some of the other churches are of greater interest. There is a small Protestant congregation. The comic characters in the Italian masked comedy are Bergamese, or affect the dialect of the country people in the neighborhood of this city. In 1796 Bonaparte took Bergamo, and it was subsequently made the capital of the department of the Serio, in the kingdom of Italy. Among many distinguished men born here are Tiraboschi, the historian of Italian literature; the composer Donizetti, and Cardinal Mai. Bergamo has a thriving trade; it was one of the first places to introduce the culture of the silkworm. Its principal manufactures are silk and other textiles, hats, farm implements and organs. Bergamum, the ancient town, was settled by the Gauls and became a municipium in Caesar's time. In 1428 it was added to the Republic of Venice. Pop. 55,857.

**BERGAMOT,** a shrub or small tree, *Citrus bergamia* (family *Rutaceæ*). The plant is largely cultivated in southern Europe, especially Italy, for its green, bitter volatile oil, known as oil or essence of bergamot, which is expressed or distilled from its highly aromatic rind for use in perfumery. The name is also applied, mainly in Europe, to many varieties of pears and in both Europe and America to several species of the family *Menthaceæ;* for example, *Mentha aquatica* (Europe), *Monarda didyma* and *M. fistulosa* (America). The name seems to be a corruption of the Turkish *beg armūdi,* a lord's pear.

**BERGEDORF,** bĕrg'ĕ-dôrf, Germany, town 10 miles southeast of Hamburg, and in the territory belonging to that city, on the Bille, a tributary of the Elbe. It has flourishing glass works and manufactures of enamel ware. Lesser productions are cane chairs, brushes and buttons, and there are tanneries and brick yards. The town is the seat of a District Court and has a *realschule* and an institution for the blind. It is the birthplace of the composer, Johann Adolf Hasse. It was held jointly by Lübeck and Hamburg till 1867, when Lübeck assigned its rights to Hamburg on payment of 200,000 thalers. Pop. 14,907.

**BERGEN, Joseph Young,** American educator: b. Red Beach, Me., 22 Feb. 1851. He was graduated at Antioch College, Ohio, 1872, and for a time was on the Ohio geological survey and professor of natural sciences at Lombard University, Salisbury, Ill. He was teacher of physics in the Boston Latin School, 1887; junior master and master Boston English High School, 1889–1901. He is joint author (with his wife, Fanny D. Bergen) of 'The Development Theory: the Study of Evolution Simplified for General Readers' (1884); (with Edwin H. Hall) of 'A Text-Book of Physics'; (with Dr. Bradley Moore Davis) of 'Principles of Botany' (1906); (with O. W. Caldwell) of 'Practical Botany' (1911); and 'Introduction to Botany' (1914). Sole author of 'Elements of Botany' (1896), and 'Essentials of Botany.' He spent four years (1901–05) in Italy, mainly in the Naples region, where he made many studies on the ecology of the plants which characterize that part of the Mediterranean coast and published papers on them in the *Botanical Gazette* and *The Plant World.* Since his return to America he has made some researches, mostly unpublished as yet, on the light-relations of plants and on transpiration.

**BERGEN,** Norway, a seaport on the west coast, capital of a province or diocese of the same name, formerly the principal town of the kingdom, but now the second. It is 186 miles northwest of Christiania, and about 25 from the open sea, and is situated on and about the head of two inlets, one of which forms the harbor. The tongue of land between the harbor and the other inlet (Puddefjord) is an elevated ridge crowned by an old fort, while the entrance on the other or northeast side is commanded by the old fortress of Bergenhus, now partly used as a prison. Rocky hills from 800 to 2,000 feet high encircle the town on the land side and furnish many picturesque spots. The climate is comparatively mild, on account of the sheltered situation, but is remarkable for rain, the annual rainfall being about 73 inches. The town is well built and clean, but the houses are mostly of wood, and many of the streets are crooked and uneven, on account of the irregularity of the site. A portion of the city, burned in 1855, has been rebuilt very regularly. Electric tramways traverse the principal streets. There are a number of squares or open spaces, including the market-place. There is a cathedral (built in 1537), and several other churches, the oldest being Saint Mary's, built after a fire in 1249. The public institutions include schools, a library of 90,000 volumes, a theatre, a museum, etc. The inhabitants of the middle coast of Norway bring timber, tar, train-oil, hides, etc., and particularly dried fish (stock-fish), to Bergen to exchange them for grain, flour and other necessaries. The town carries on a large trade in these commodities. It is the great fish market of Norway. Twice a year the Norland men come to Bergen with their fish. In March and April several hundred vessels are to be seen in the harbor at once, laden with the produce of the winter fishing and with skins and feathers. Codfish for salting, fish roe, blubber, skins, herrings and cod-liver oil are the chief exports, amounting to two-fifths those of the entire country. A fair, attended by fishermen of all nations, is annually held. A fishery museum was established here in 1881. A considerable amount of ship-building is carried on. A United States consul is resident here. Bergen is the native place of the poet Holberg. Bergen was founded in 1070 by King Olaf Kyrre, who made it the second city of his kingdom, and it was soon raised to the first rank. The first treaty entered into by England with any foreign nation was made with Bergen in 1217. But the English and Scottish traders were soon displaced by the merchants of the Hanse towns, who made Bergen one of their four depots, compelled the fishermen to trade here exclusively, and continued to exercise and abuse their monopoly until their supremacy was broken by an act issued by Frederick II

of Denmark in 1560. In 1763 their last warehouse fell into the hands of a citizen of Bergen. Pop. 76,867.

**BERGEN-OP-ZOOM,** berg'en-ŏp-zōm', Holland, a town in the province of North Brabant in a marshy situation on the Scheldt, where the Zoom enters it, 20 miles north-northwest of Antwerp. It was formerly a strong fortress, the morasses around it making it almost inaccessible to an assailing force, while its fortifications consisted of regular works, constructed by the celebrated Coehorn. It is well built, but has no edifices deserving of particular notice. It made an important figure during the Spanish war, and successfully resisted the attacks of the Duke of Parma in 1581 and 1588, and of Spinola in 1622. It was taken by the French in 1747 after a siege of nearly three months; and in 1795 the French under Pichegru again gained possession of it by capitulation. It was unsuccessfully attempted by the British under Sir Thomas Graham, afterward Lord Lynedoch, in 1814. Its trade has suffered greatly from the proximity of Antwerp. Its industries include the making of cloth, pottery and bricks, and it raises and exports considerable quantities of oysters and anchovies. Pop. 15,000.

**BERGENROTH, Gustav Adolf,** German historian: b. Oletzko, East Prussia, 26 Feb. 1813; d. Madrid, 13 Feb. 1869. Graduating from University of Königsberg, where he had studied law, he entered the service of the Prussian government. On account of his activities during the revolutionary disturbances in 1848, in which he took a prominent part, he was dismissed from the government service, whereupon he emigrated to California, in the United States. Here he remained only a few years, however, returning to Europe in 1851. He now became interested in historical research and in 1857 settled in England, where he began a deep study of the historical records and state papers covering the times of the Tudors. In 1867 he went to Simancas, Spain, to continue his historical studies, where he remained until his death. His chief work is 'Calendar of Letters, Despatches and State Papers Relating to the Negotiations Between England and Spain, Preserved in the Archives of Simancas and Elsewhere' (London 1862–68).

**BERGER, Georges,** French critic and essayist: b. Paris 1834; d. 1910. His early years were spent in the management of his own agricultural interests: he owned large vineyards, from whose income he was enabled to devote most of his time to a study of art. He took a prominent part in the supervision of the exhibitions held in 1867, 1878 and 1899. Finally he accepted an appointment to the chair of æsthetics and the history of the fine arts at the Ecole des Beaux-Arts, a position he retained for many years. During this period he served also as a deputy in the chamber for the department of the Seine. He was honored with membership in the Institute of France, the Higher Council of the Fine Arts and the Council of National Museums. He contributed copiously to periodical literature, but his most prominent work is 'The French School of Painting from its Origin Down to the Reign of Louis XIV' (1879).

**BERGER, Ludwig,** German pianist and composer: b. Berlin, 18 April 1777; d. there, 16 Feb. 1839. After studying composition under Gürrlich, he went to Dresden, in 1801, there to continue his studies under Naumann. Later he accompanied Clementi on a tour to Saint Petersburg, where he remained for six years. In 1812 he went to Stockholm and later to London, where he again met Clementi and undertook a short tour with him. In 1815 he returned to Berlin, where he remained until his death. During this period he was the teacher of Mendelssohn, Taubert and others who later became famous. Many of his compositions are still popular, especially his 'Die schöne Müllerin.'

**BERGER, Philippe,** French Orientalist: b. Beaucourt, Alsace, 1848. Having concluded his studies at Strassburg and Paris, he became assistant librarian at the Institute and professor of Hebrew at the Sorbonne. Later he was appointed to the chair of Hebrew, Syriac and Chaldee at the Collège de France, succeeding Renan. A few of his many works are 'L'Ecriture et les inscriptions sémitiques' (1880); 'L'Arabie avant Mahomet' (1885); 'Histoire de l'écriture dans l'antiquité' (1892); 'Etudes sur les renseignements fournis sur le gnosticisme par les Philosophoumena' (1893); 'Le Musée Saint-Louis de Carthage, antiquites phéniciennes' (1900); 'Un nouveau tarif des sacrifices à Carthage' (1910); 'Le Culte de Mithra à Carthage' (1912).

**BERGER, Victor,** German-American Socialist leader and United States congressman: b. Nieder Rebbuch, Austria, 28 Feb. 1860. Having graduated from the University of Vienna, he emigrated to Milwaukee, Wis., where he became a teacher of German in the public schools. He became at once interested in the activities of the Socialists and was one of the founders of the American Socialist Party. In 1892 he was made editor of the Milwaukee *Daily Vorwaerts* by the party local leaders. Since then he has edited various other Socialist papers and periodicals in Milwaukee. In 1911 he was elected to Congress by the Socialist vote of Milwaukee, being the first of that political faith to be sent to Washington.

**BERGERAC, Savinien Cyrano de,** French author: b. 1619; d. 1655. He was distinguished for his courage in the field, and for the number of his duels, more than a thousand, most of them fought on account of his monstrously large nose. His writings, which are often crude, but full of invention, vigor and wit, include a tragedy, 'Agrippine,' which was regarded at the time as the vehicle of atheistic teaching; and a comedy, 'The Pedant Tricked,' from which Corneille and Molière have freely borrowed ideas; and his 'Comical History of the States and Empires of the Sun and the Moon' probably suggested 'Micromégas' to Voltaire, and 'Gulliver' to Swift. His works have been frequently republished. He was made the hero of a drama bearing his name, written by Edmond Rostand, the French playwright, which had a phenomenal success in the United States in 1899–1900, and was the occasion of a suit for plagiarism. See ROSTAND, EDMOND.

**BERGERAC,** France, town in the department of the Dordogne, about 25 miles south-southwest of Périgueux, and on the river Dor-

dogne. In 1345 the English took the town and fortified it. They were driven off but again took it and it was in their hands until 1450. It contains a splendid Gothic church, dating from 1856. Its industries include brewing, flour milling, paper manufacture, tanning, weaving, hat-making and hosiery. There is a considerable trade in brandy, fish and wine. The town, 48 miles east of Bordeaux, gives the name to an agreeable wine cultivated on the banks of the Dordogne, in France sometimes called *petit champagne*.

**BERGERAT,** bārzh-rą, **Auguste Emile,** French journalist, playwright and novelist: b. Paris, 29 April 1845. He received his education in a Jesuit seminary, the Lycée Charlemagne, and at first aspired to be an artist, but soon after turned his attention to journalism. He is son-in-law of Théophile Gautier, and since 1884 particularly known as the amusing chronicler of the *Figaro* under the pseudonym of CALIBAN. His *feuilletons* for that paper were published collectively as 'Life and Adventures of Sieur Caliban' (1886); 'The Book of Caliban' (1887); 'Caliban's Laughter' (1890), etc. He also wrote two novels, 'Faublas in Spite of Himself' (1884); 'The Rape' (1886). He has published 'War Poems' (1871); 'Enguerande,' a dramatic poem (1884); 'La lure comique' (1889); 'La terre est le domaine de l'humanité' (1903); 'Ballades et Sonnets' (1910); 'Souvenirs d'un enfant de Paris' (Vol. I, 1911; Vols. II and III, 1912; Vol. IV, 1913); besides two volumes to the memory of his father-in-law, 'Théophile Gautier, Painter' (1877), and 'Th. Gautier, Conversations, Souvenirs and Correspondence' (1879).

**BERGH,** bėrg, **Henry,** American philanthropist and author: b. New York, 8 May 1820; d. there, 12 March 1888. He was educated at Columbia College, and from 1861 to 1864 was in diplomatic service, being secretary of the American legation and United States consul at Saint Petersburg. In 1865 he founded the American Society for the Prevention of Cruelty to Animals, was chosen its president, and in 1866 secured the passage of an act giving the Society the power of making arrests and carrying on prosecutions for violations of the statute on which the organization was instituted. He remained president of the Society until his death, being ever its guiding spirit, living entirely in its work, and serving without compensation. At the beginning of his work no State or Territory had any statute relating to the prevention of cruelty to animals. At the time of his death 39 States had proper laws on the subject, and in 36 of them branch societies of the organization had been formed. The work of the Society was extended to Argentina, Brazil and Canada. He was the author of a volume of tales and sketches 'The Streets of New York'; a successful drama, 'Love Alternative,' produced in Baltimore (1881); 'The Portentous Telegram'; 'The Ocean Paragon'; and 'Married Off; a Poem' (1859). Berg also founded the Society for the Prevention of Cruelty to Children, which is now firmly established in every State of the Union.

**BERGH, Johann Edvard,** Swedish landscape artist: b. Stockholm 1828; d. 1880. He studied at the Stockholm Academy, taking first prize there in 1853. He prosecuted his studies later with Gude at Düsseldorf and at Geneva under Calame. He toured Italy in 1856–57 and on his return to Sweden became professor in the Stockholm Academy. He is looked upon as the founder of a new school of landscape art in Sweden, distinguished by accurate drawing, intelligent representation of nature, and a very decided nationalism. Among his most noted subjects are 'Wood Interior' (Stockholm Museum); 'View of Stockholm' (owned by the King of England); 'View in Dalecarlia' (Amsterdam), and 'Beech-Wood' (Sothenburg).

**BERGH, Pieter Theodor Helvetius van den,** Dutch dramatist and poet: b. Zwolle 1799; d. 1873. He took up his residence successively in Paris, Brussels and Vienna, and after becoming blind removed to The Hague. Here, in collaboration with Weiland, he edited the *Magazijn voor Toon en Schilderkunst*. He attracted attention with his comedy 'The Nephew' (1837), considered one of the best in modern Dutch literature, but did not justify expectations by his subsequent dramatic efforts. He also published 'De Nichten,' and a collection, 'Prose and Poetry' (3d ed., 1863).

**BERGHAAN,** bėrg'hān, a Dutch and colonial name in south Africa for several large hill-haunting eagles, especially the bataleur (q.v.).

**BERGHAUS, Heinrich,** German geographer: b. Cleve, 3 May 1797; d. Stettin, 17 Feb. 1884. He served in 1815 in the German army in France, and was from 1816 to 1821 employed in trigonometrical survey of Prussia under the War Department. From 1824 to 1855 he was professor of applied mathematics in the Berlin Academy of Architecture. Besides his various maps and his great 'Physical Atlas' (republished in a remodeled form in 1886–92), he published 'Allgemeine Länder und Völkerkunde' (1837–41); 'Die Völker des Erdballs' (1852); 'Grundlinien der physikalischen Erdbeschreibung' (1856); 'Grundlinien der Ethnographie' (1856); 'Deutschland seit hundert Jahren' (1859–62); 'Was man von der Erde weiss' (1856–60). His correspondence with Humboldt was published in 1863.

**BERGHAUS,** bėrg'hows, **Hermann,** German cartographer, nephew of Heinrich Berghaus (q.v.): b. Hereford, Westphalia, 16 Nov. 1828; d. Gotha, 3 Dec. 1890. During most of his life he was cartographer in the Geographical Institute of Justus Perthes at Gotha. His best known work is a chart of the world (1863) which has gone through 11 editions. He also prepared a 'Physikalische Karte der Erde' (1874); 'Physikalische Wandkarte von Europa' (1875); 'Physikalische Wandkarte von Afrika' (1881). Besides this he supervised the revision of his famous uncle's 'Physikalischer Atlas' (1886), which work was participated in by many noted specialists.

**BERGHEM, Nikolaas.** See BERCHEM, NIKOLAAS.

**BERGK, Theodor,** German classical philologist: b. Leipzig, 22 May 1812; d. Ragaz, Switzerland, 20 July 1881. He became an indisputable authority on Hellenic poetry, producing two works of surpassing importance in that department of scholarship: 'Greek Lyric Poets' (4th ed., 1878–82), and 'History of Greek Lit-

erature' (1872); the latter brought to completion with the aid of his posthumous papers.

**BERGMAN, Torbern Olof,** Swedish natural philosopher and chemist: b. Katharinberg, West Gothland, 20 March 1735; d. 1784. Sent to Upsala with a view to preparaing either for the Church or the bar, he, disliking both, gave his attention to natural history, physics and mathematics. He soon made important discoveries in entomology and became noted as an astronomical observer. In 1758 he became doctor of philosophy and professor of physics at Upsala. Upon the resignation of the celebrated Wallerius, Bergman was a candidate for the professorship of chemistry and mineralogy. His competitors charged him with ignorance of the subject, because he had never written on it. To refute them he shut himself up for some time in a laboratory, and prepared a treatise on the manufacture of alum, which is still considered as a standard work. In 1767 he became professor of chemistry, and devoted himself with ardor to this science. He invented the preparation of artificial mineral waters, and discovered the sulphuretted hydrogen gas of mineral springs. We are indebted to him for a knowledge of the characters which distinguish nickel from other metals. On a number of minerals he made chemical experiments, with an accuracy before uncommon. He published a classification of minerals, in which the chief divisions are based on their chemical character, and the subdivisions on their external form. In preparing this work he was much aided by his former discoverer of the geometrical relations between different cystals of the same substance, which may be deduced from one primitive form, and are produced by the aggregation of similar particles, according to fixed and obvious laws. His theory of the chemical relations is still esteemed, and although it has received new developments from the further researches of Berthollet, has not been overthrown. The order of Gustavus Vasa was bestowed on Bergman. Among his works the first place is due to 'Opuscula Physica, Chemica, et Mineralia' (Upsala 1779–94), of which an English translation appeared. His famous essay on 'Elective Affinities' was translated into English by Dr. Beddoes.

**BERGMANN, Julius,** German philosopher: b. Opherdike, Westphalia, 1840; d. Marburg 1904. At Göttingen and at Berlin he devoted himself to mathematics and philosophy, was appointed to the chair of philosophy at Königsberg in 1872, and three years later to a similar chair at Marburg. Among his more important writings are 'Grundlinien einer Theorie des Bewusstseins' (1870); 'Zur Beurteilung des Kriticismus' (1875); 'Reine Logik' (1879); 'Sein und Erkennen' (1880); 'Die Grundprobleme der Logik' (1882); 'Geschichte der Philosophie' (1892–94); 'Untersuchungen über Hauptpunkte der Philosophie' (1900); 'System des objektiven Idealismus' (1903).

**BERGMANN Karl,** American musician: b. Ebersbach, Saxony, 1821; d. New York, 10 Aug. 1876. He studied at Zittau and Breslau. Participation in the revolutionary outbreaks of 1848 obliged him to go into exile and he came to New York. He organized and conducted the first great German music festival, held in the Winter Garden Theatre (1855); in 1856 introduced German opera at Niblo's Garden, and for several years prior to his death conducted the concerts of the Philharmonic Society. He composed several orchestral pieces, and excelled as a player of the violoncello and the piano. He contributed greatly to the advancement of good music in America.

**BERGMEHL.** See DIATOMACEOUS EARTH.

**BERGONZI, Carlo,** Italian violin maker: b. Cremona 1715; d. there 1755. He was an associate of the famous Stradivari, from whom he learned the art at which both were such adepts. Beyond that little is known of his life. His violins are now rare and bring high prices, though not so high as those of his master. They are not only remarkable for their tone, but for their beautiful shapes as well.

**BERGSCHRUND,** the large crescentic crevasse partly encircling the head of a glacier, caused by the forward movement of the ice which flows away from the stationary snow and rock walls. See GLACIER; CIRQUE.

**BERGSOE,** bĕrg'sę, **Jorgen Vilhelm,** Danish novelist, poet and naturalist: b. Copenhagen, 8 Feb. 1835; d. 1911. While suffering partial blindness, caused by excessive use of the microscope in his memorable biological researches at Messina, he turned to literary composition; and soon appeared the first of a cycle of novels, 'From the Piazza del Popolo' (1866), which had an extraordinary success. The following year he published his first volume of poems, 'Now and Then' (1867). Of his many novels, the one which excels for fineness of touch is, 'Who was He?' (1878). All his stories are characterized by rich imagination, fine observation and great originality; his poetry is inferior in these respects to his prose. He also wrote an historical work 'Rome under Pius IX' (1877).

**BERGSON, Henri,** French philosopher: b. Paris, 18 Oct. 1859. He received his education in Paris, graduating from the École Normale with the degree Licencié ès-Lettres. He then taught at provincial lycées and colleges for a number of years, removing to Paris and taking his degree of Docteur-ès-Lettres in 1889. In 1898 he received an appointment in the École Normale in Paris and two years later became a professor in the Collège de France. In 1913 he visited America where he delivered a course of lectures at Columbia University. The same year he was also president of the English Society for Psychical Research, and delivered addresses at London and Oxford. The volumes in which his philosophical ideas are contained have been translated into English and other languages. The three principal books are 'Essai sur les données immédiates de la conscience' (tr. into English under the title, 'Time and Free-Will,' London and New York 1910); 'Matière et Mémoire' (1896, English tr., 'Matter and Memory,' London 1911); 'L'Evolution Creatrice' (1907, English tr., 'Creative Evolution,' New York 1911). In addition, the following translations into English have appeared from his writings: 'Introduction to Metaphysics' (New York 1912); 'Laughter' (New York 1911); 'The Perception of Change' (Oxford 1911); 'The Meaning of the War' (London 1915). For an account of Bergson's philosophy, see BERGSONISM.

**BERGSONISM,** the teaching of the French philosopher, Henri Bergson (q.v.). The central idea of this philosophy is Freedom; it is at once an explanation and a refutation of mechanism —a refutation of the claim of mechanical principles and methods to furnish a final explanation of things, and a demonstration of the essential use and function of these ideas in human life. The significance of Bergsonism in France consists in its attempt to meet and refute the determination and pessimism of writers who claimed in the name of "science" to lay down certain general conclusions regarding man's place in nature. In the first place, the most original feature of this system is that it finds its primary datum and its explanatory principle in life. The classical historical philosophies, realistic and idealistic alike, proceeded on the plane of the intellect. The relation of ideas and objects furnishes the material for philosophy — the one school explaining ideas as the effects of the movement of material bodies, the other interpreting material things in terms of ideas. For both alike, the relation of man to the world is stated in terms of ideas; both put science or knowledge in the first place. But for Bergson life is something deeper and more significant than knowledge. To live is something more fundamental than to know. All the distinctions that we make, such as that between ideas and objects, between inner and outer, fall within the original unity of the life process. They are *secondary* distinctions which the reflective intelligence introduces for the sake of its own practical purposes into the immediate unity of life as it actually goes on. Life itself is just unceasing change, an integral continuous process, not made up of parts, but something that is one and indivisible throughout. Moreover, it is characteristic of life that its changes cannot be predicted; it is in its very essence undetermined spontaneity, free creative energy, which constantly advances to what is genuinely new. This creative vital process is at once the reality and moving principle of individual life and of the cosmos as a whole. We become aware of it directly in ourselves through intuition; and through sympathy, through the power which life everywhere possesses of recognizing life, we divine its presence in objects and in the world as a whole. For we ourselves are part and parcel of the total cosmic movement; all reality is alike a manifestation of the same vital impulse, the *élan vital,* as Bergson names it. The ultimate principle for this philosophy is accordingly neither conscious mind nor material substance or energy; the ultimate reality does not consist of unchanging elements, whether conceived as material or as "mind stuff"; but it is a moving, creative, living process, in which there is nothing fixed and static, nothing isolated or related only externally to other things and to the whole. It is *creative* evolution. We become aware of the nature of reality through direct experience of it, by entering into it, forming a part of it, and interpreting it through sympathy. This direct form of knowing, Bergson names Intuition, and he contrasts it sharply with Logic or Intellect, which he confines to the analytic procedure of the reflective understanding.

Intuition, which is just the immediate awareness of life by itself, through direct experience and illumined by sympathy, reveals the true nature of reality as a creative indivisible process of change or development. On the other hand, the reflective understanding breaks up this integral process into a world of permanent objects existing in apparent isolation, and proceeds to organize them into casual systems and to represent their relations by means of conceptions which completely exclude freedom. Through this logic of the intellect the standpoint of physical science comes into existence. But this intellectual way of reading reality is only a representation of it in symbolic terms. It does not set before us reality as it really is, but is a translation of the real, made in the interest of practical life, into a series of concepts and symbols. For it is not the function of logic and scientific analysis to reveal to us the *nature* of the world, but to furnish, through the use of symbols, such a schematized representation of things as will enable us to deal with them in a practical way. Science is an intellectual procedure, depending on analysis. But to analyze is to present a thing as a function of something else; all analysis is thus a translation, a development into symbols, a representation, it may be from successive points of view in which we note as many resemblances as possible between the object we are studying and other objects which are taken as already defined. Its results accordingly are always *relative,* yielding only a formulation of the thing in terms of something other than itself. But, it may be asked, Is it possible to know a thing except in this relative way? Bergson replies that there is at least one object which we are able to seize from within by direct intuition, and that is our own personality as it appears as a conscious stream in time. This life is not, however, composed of discrete states of consciousness, as psychology describes it, and as our ordinary thought is accustomed to represent it; but it is, as actually lived, a continuous flow, a temporal whole without differentiation into distinct states or parts. The tendency to conceive of the mental life as constituted by the addition of "states of consciousness" rests upon the representation of time in terms of space. It is essential to distinguish between real time or duration (la durée réelle) and the mathematical view of time which is that of an empty homogeneous qualityless medium, which allows us only to distinguish points as external to each other. Bergson uses many figures in order to make clear his view of Duration — the concrete form of the mental life. Perhaps his most illuminating metaphor is that of the way in which a musical phrase is apprehended. The various notes which compose it are successive, yet are not apprehended as a mere succession. They interpenetrate: each has its own place as part of the musical idea, yet each contains within it what has preceded, and prepares for that which is to follow. So inner experience, life, is a whole, not as an aggregation of external parts or states of consciousness, but in the sense of a movement which sums up the past and presages the future, uniting them both in itself. It is a continuous process of change, which, however, must not be regarded as a passing away of "states" or "moments," but as a whole which changes and endures while changing. The intelligence, operating by means

of logical concepts, cannot enter into the real flow of time: it can represent movement only by taking cross-sections of the process, and determining and describing the condition of things at some specified point. When science professes to measure time and motion, what it does is to leave out of account in them what is really characteristic, the duration and mobility, and to measure the correspondence of certain fixed points, or determine the relations of certain elements of the system with which it is dealing, at the end of a longer or shorter period. A favorite figure of Bergson for describing the operation of the intellect is the cinematograph. "The intellect fixes things as an order of existing things in space, setting each thing off as something distinct and unchanging. To represent change, it is said, we must introduce time. But it is only the fiction of time that the intelligence is able to represent, just as it is only the appearance of movement that the cinematograph gives us. In both cases alike, we have presented, not real change, and not motion, but only a succession of fixed states; not the flow which is the real, but a representation of it in terms of what is static and unchanging." The idea of time which the sciences employ is therefore not that of real concrete time at all, but of time which has been assimilated to space. Time from this point of view is represented as a line, or as the successive movements of a body over the parts of a line. But, so regarded, it is robbed of its real continuity, and of all that is characteristic of concrete time, being assimilated to space in two respects. First, it is regarded as something discrete, made up of parts, of minutes or seconds, or fractions of a second. And, secondly, it is reduced to terms of space by being regarded as homogeneous throughout, in short, as having quantity but no quality. But time is in every respect the antithesis of space; it is not quantity, but pure quality. Space is homogeneous and without quality, it is made up of parts that are discrete: it is just pure quantity without quality.

But it is on this spatial view of things that the physical sciences are built up: the logic of their procedure is based upon the arrangement of solid bodies in space. Corresponding to the antithesis of space and time, accordingly, there is the opposition between life as a continuous movement, essentially free and creative, and the world of permanent objects, standing apart from each other, and related by necessary laws. The former is the view of Intuition, the latter that of the logic of the Intellect. But the former is the world of real immediate experience, the latter a transformation or construction of the former effected by the intelligence. It is because we are made for action as well as for speculation that this transformation of the real is necessary. The intellect is the servant and instrument of action. For the sake of action, it is necessary to break up the inner flow of events, differentiating it into permanent elements with fixed relations. Only by thus externalizing and fixating the unceasing movement of the real can we get a fulcrum for our action; only by symbolizing it by means of unchanging concepts and established definitions are we able to predict the future behavior of things; and without such prediction we should be unable to act. Moreover, it is inevitable that these same concepts and descriptive terms which have proved so practically important in dealing with the outer world should be carried over to the mental life, and that psychology should come to describe the mind by means of concepts and methods derived from the physical sciences. Nor is it possible to deny a certain justification to this description: mind has a mechanical habitual side, and to a large extent we live in terms of external acts and ideas. But in our every-day acts and ordinary associative play of ideas we live outside our true selves; and it is only such an externalized form of life which can be represented or symbolized in terms of separate states of consciousness and their relations.

We have now before us the grounds on which Bergson bases his defense of freedom. Freedom is possible because the intellectual point of view is not absolute and final. The concept of causality and the logical standpoint of the sciences is something which the intelligence has superimposed upon reality as it is immediately given in experience. It has even extended this deterministic point of view to living things and to the inner world of consciousness. But this transformation is for practical purposes only. The true reality as it is lived is quite different from the symbolic representation of it which science gives: reality is no repetition of identical terms, but a free creative process in which what appears is new and original. The importance of Bergson's view of change as a process of creation is seen when this is contrasted with the older ways of conceiving of the process of evolution. The logic of the sciences, unable to deal with genuine change, represents evolution as a procession of unchanging elements. From this standpoint, the process of evolution is described as consisting in the redistribution of matter and energy: in a progressive adjustment of factors and forces which are taken as given, ready-made, perhaps contained in the primitive nebula from which the movement is supposed to set out. And the same thing is true in principle of those theories which find in the idea or intelligent end the explanation of the evolutionary process. In both cases alike, nothing genuinely new ever occurs: all is predetermined, prearranged: there is transformation and redistribution, but no real change. From this point of view, real time is eliminated, being taken to be only an external medium like space: it is that in which things are, but it is not essential to them or they to it. But concrete time *bites into* things, and is essential to their comings and goings. Bergson describes his own point of view by the term "creative evolution." Change must find its way to the very heart of things, time is of their very essence; the concrete movement of life and history cannot be adequately represented in terms of the mechanical redistribution of abstract elements or unchanging counters. It is noteworthy that in this connection he represents teleology as in principle identical with mechanism, being, as he says, nothing but an inverted mechanism, and like it an intellectual and deterministic point of view.

Bergson, however, does not confine his defense of Freedom to these general considerations. In his book entitled 'Matter and Memory,' he enters into a detailed discussion of the relations of body and mind. The gen-

eral position which he defends is that the body, like the intellect, is the tool or instrument of life, not something which causes or determines it. By an examination of psycho-physical experiments, he attempts to refute the current notion that the brain is a kind of manufactory of ideas, or that memories are stored up in brain cells. To understand the function of the brain, we must regard it, not from the point of view of knowledge, but from that of action. The body is organized for action, the impressions which pass into the body are stimuli for action, and the function of the brain (which may be compared to a telephone exchange) is to respond by initiating the appropriate movement. Perceptions then depend upon the body, and their function is not theoretical, but purely practical. On the other hand, pure memory is completely spiritual in character, it does not depend upon the body, but is the affirmation of the life of the spirit. These two, pure perception and pure memory, are fundamentally different in principle and origin and sharply opposed to each other in every way. Nevertheless, in concrete experience they co-operate, always being found in correlation. But in the end, Bergson maintains that the memory, as the inner spiritual principle, is primary and that it subordinates to itself the body and the life of perception. Progress consists in bringing the past to bear upon the present, in prolonging memory through perception, in the embodiment of the spiritual in the material, in making the inner outer.

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**BERGSTRÖM, Hjalmar,** Danish playwright: b. 1868. In 1893 he became a teacher in the Brockshe Commercial School, where he remained until 1905. He is a member of the commission for the preservation of the manuscripts of neglected Danish dramatists and one of the directors of the Danish Dramatic Society. Most of his plays were first produced in Copenhagen at the Royal Theatre. Among the most important are 'Ida's Wedding' (1902); 'Möntergarde 39' (1904); 'Lynggaard & Co.' (1905); 'The Golden Fleece' (1908); 'The Birthday Party' (1910); 'The Way to God' (1912). 'Lynggaard & Co.' has been translated into English by Edwin Björkman in 'The Modern Drama Series' (New York 1913).

**BERGUES,** bārg, France, town in the department of Le Nord, in a marshy district, five miles south of Dunkirk; pop. (1911) 4,856. It is situated at the confluence of three canals, one of which admits vessels of 300 tons' burden and connects Bergues with Dunkirk and the sea. This circumstance, united with its central position, makes it the entrepôt of the adjoining country. It has manufactures of beer and oil and also sugar and salt refineries. It ranks as a fortress of the second class, is well built of brick and has facilities for laying the valley under water as a defensive measure in war time. Its principal edifices are the townhouse and a beautiful and richly ornamented belfry about 160 feet high. It owes its origin to the castle of Berg, to which Saint Winnoc retired in 902, was first fortified by Baldwin II, Count of Flanders, afterward adorned with a magnificent monastery of Saint Winnoc by Baldwin IV, and in the 13th century possessed flourishing manufactories. It has suffered all the vicissitudes of a frontier fortress; it was finally taken by Louis XIV in 1667, and Vauban so effectively fortified it that the English found it impregnable in 1793.

**BERGUT,** or **BEARCOOT,** the Tartar name in Central Asia for the golden eagle (see EAGLE), there trained by Kirghiz for use in falconry.

**BERHAMPUR,** bĕr-hăm-poor', India, the name of two towns. (1) The capital of the Ganjam district, Madras, 525 miles northeast of Madras, with which it is connected by rail. A good road leads from it to the coast town of Gopalpur, nine miles distant. As the headquarters town of the district, it contains the usual official buildings. (2) A town of the Moorshedabad district, Bengal, on the left bank of the Bhagirathi, five miles south of Moorshedabad. Berhampur was at one time a large military station of the British. It contains a college, hospitals and churches. The cantonment has been abandoned. The town has manufactories of gold, embroidered turbans and tussah-silk cloths. Improved sanitation methods have made the place the equal of any in Bengal for healthfulness. The first open act of the Sepoy mutiny took place here on 25 Feb. 1857. The town contains a government college. Pop. 22,777.

**BERI-BERI,** bā-ri-bā-ri. This is the strange name for a disease of which but few cases are seen in the United States, but in Oriental countries and in the Philippines it is of common occurrence and still more so in Japan. It is also very common in Ceylon, Java, Borneo and the Malay countries elsewhere. It is a member of the group of diseases called tropical diseases which at the present time, when all the nations of the world are neighbors and mutually interested in each other, for purposes of trade if for nothing else, are being constantly investigated. The word originated in Ceylon and simply means great weakness, in Japan it is called Kakke, while the English equivalent is tropical endemic multiple neuritis. It is common not only among the common people in tropical countries, but is also often seen in camps, hospitals and on shipboard.

Multiple neuritis is a disease which is very well known in this country, it is very painful, disfiguring, protracted and fatal. If a large number of people were constantly affected with this disease at the same time and in the same region of territory it would be called endemic multiple neuritis, and if they were in a tropical country it would be called beri-beri.

Multiple neuritis, in temperate climates, can come from a great many causes, from the free use of alcohol in any form, from poisoning by arsenic, lead, mercury or phosphorus, from syphilis, malaria and the infectious fevers, from cold and wet, poor food and poor home surroundings, and some of these causes are often at work when the disease is called beri-beri.

So many diseases are the result of germ life and action, it was thought for a long time there must be such a cause for this disease. As yet no such germ has been found, though when it is associated with other diseases like syphilis, malaria and the infectious fevers, the specific germs of those diseases will of course be present. It is chiefly observed in those countries in which rice forms the principal article of food for the majority of the people, and about 20 years ago it began to be suspected by those who were studying the disease in the islands of the East India archipelago that there must be a relation between a diet of rice and this disease, especially after it was observed that those who had multiple neuritis as a result of insufficient food and those who were fed on a diet of polished rice, that is, rice from which the husk has been removed, suffered with the same symptoms.

In experiments which were made on fowls the symptoms of multiple neuritis were produced when they were fed on polished rice but not when they were given the unhusked or red rice. Similar results were obtained on human beings in Java, in the Malay Peninsula, and in the Philippines, and hence it was concluded that the husk of rice like the husk of wheat contains important mineral constituents, probably phosphorus in particular, the lack of which resulted in the development of beri-beri. When those who suffered with this disease were fed with rice bran they at once began to improve and steadily got well. In this disease there is injury or destruction of the ends of the nerves which go to the skin, with consequent loss of sensation, and of those which go to the muscles, with loss of motion and gradual withering, the heart muscle becomes flabby and weak and the liver, kidneys, lungs and spleen become congested. There are two forms of the disease, the wet and the dry.

In the wet form there are dropsical swellings of the tissues, especially of the legs and ankles, and the cavities of the body, the abdomen, the chest and the pericardium, which surrounds the heart, become more or less filled with fluid. This of course produces great weakness, difficulty in walking, standing and breathing, weak heart action and frequently death within a few days. The disease often begins with a chill and besides the symptoms already mentioned there are fever, nausea, vomiting of blood, albumen in the urine, etc. Should the disease take a favorable turn the bad symptoms will gradually subside leaving more or less paralysis and withering of the muscles which after weeks or months may entirely disappear. In the dry form of beri-beri the disease progresses slowly and is less fatal than the wet form. It begins with neuralgic pain in the extremities and with changes in the nutrition of the skin. There are cramps, tenderness to the touch, deformity of the joints, paralysis of the muscles and unsteady gait. Then follow disturbances of the stomach, blood poisoning and emaciation, and the disease may continue for weeks, months or years or until some other disease develops and the patient dies. The mortality from both forms of the disease is from 10 to 40 per cent. The most important thing in the treatment of the disease is to change the diet from polished rice to unpolished, that is with the husk intact or ground up in bran with the rest of the kernel. Preventive measures are all important and mean proper diet, freedom from exposure to wet and cold, freedom from excesses and vice, and avoidance of infectious tropical diseases. Tonics like quinine and strychnia must be given, and such drugs as will relieve pain and assist in removing the dropsical fluids from the body. Massage, electricity and hot baths also play an important part in the treatment.

**BERING**, bē'ring, or **BEHRING, Vitus**, Danish navigator: b. Horsen 1680; d. 19 Dec. 1741. Being known as a skilful seaman, he was employed by Peter the Great in the navy established at Cronstadt. His talents and the undaunted courage displayed by him in the naval wars against the Swedes procured him the honor of being chosen to command a voyage of discovery in the Sea of Kamchatka. He set out from Saint Petersburg, 5 Feb. 1725, for Siberia. In the year 1728 he examined the northeastern coasts of Asia, discovered the strait named after him and proved that Asia is not united to America. It remained, however, to be determined whether the land opposite to Kamchatka was in reality the coast of the American continent or merely islands lying between Asia and America. On 4 June 1741 he sailed, with two ships, from Okhotsk, and touched the northwest coast of America. Tempests and sickness prevented him from pursuing his discoveries; he was cast on a desolate island covered with snow and ice, where he died. The account of the voyage was written by the survivor, Steller (Saint Petersburg 1793). Consult also the 'Life' by Laridsen (Chicago 1890).

**BERING SEA**, that part of the north Pacific Ocean between the Aleutian Islands, in 55°, and Bering Strait, 66° N., by which latter it communicates with the Arctic Ocean. It has on its west side Kamchatka and the Chukchi country, with the Gulf of Anadyr, and on its east the territory of Alaska, with Norton Sound and Bristol Bay; contains several islands, and receives the Yukon River from North America and the Anadyr River from Asia. It is about 1,000 miles from north to south and 1,500 from east to west. Fogs are almost perpetual in this sea. Ice is formed and melted in the sea every year, the northern part becoming closed to navigation about the beginning of November. The chief islands are the Pribilof, Nunivak, Saint Lawrence and Saint Matthew. The northern portion is about 100 fathoms deep, while the southern portion has a depth of from 1,000 to 1,700 fathoms. Pack ice gradually extends southward to a little below the latitude of Saint Matthew's Island (60½°), beyond which ice is found in floes. The southern limit of the ice usually extends from Bristol Bay, Alaska, to about 35 miles south of the Pribilof Islands though in exceptionally severe winters it reaches as far south as Unimak Pass. It usually leaves the Pribilof Islands about 1 May, and vessels

following in its wake may reach Bering Strait between about 15 and 25 June. A strong and comparatively warm current sets northward at about two to three knots an hour, through Bering Strait, and after following the Siberian shore turns north toward Herald Island. A cold current also passes out through the strait.

**BERING SEA CONTROVERSY**, an international dispute over the territorial status of that sea, chiefly between the United States and Great Britain, and growing out of attempts of the former to protect its fur-sealing industries there from the Canadian subjects of the latter. This industry rests on three great herds in the north Pacific, which resort regularly to certain islands in the breeding season, from May or June till the autumn storms, then move southward to about 35° N., and gradually work northward the next spring. At the islands the elder males remain with the young on the beach while the females go in search of food, sometimes 200 miles. The younger males, or "bachelors," two to four years old, herd apart, and should furnish all the commercial sealskins, the pelts of the old males being unsalable and the killing of females a blow at the continuance of the species. But this selection can only be made on shore; pelagic or ocean sealing is at best indiscriminate if done during migrations, and is almost exclusively of females during the breeding season, while every mother seal then killed means a young seal starved ashore. The largest of these "rookeries" is on the Pribilof Islands in Bering Sea, where the Russian-American Company carried on sealing till their cession to the United States in 1867, when it was taking some 40,000 seals a year; the herd being protected by restrictive regulations. In 1821 Alexander I issued a ukase claiming Bering Sea as Russian property, and forbidding trespass on pain of confiscation; but the United States and Great Britain protested so vigorously that the claim was dropped. After the cession, the rivalry of competing companies would speedily have made an end to the seals in the Northern Ocean, as it long since had in the Southern, had not the United States leased the islands for 20 years to the Alaska Commercial Company (which then leased the Russian seal-islands also) for $55,000 a year and $2.62½ a skin, restricting the catch to 100,000 a year. In fact the company kept a little under that mark; but the contract was so profitable that vessels were soon fitting out from British Columbia, Hawaii and Australia, which intercepted the seals as they passed between the Aleutian Islands northward or southward, or entered Bering Sea and caught the females as they ranged the seas for food. The poaching grew in volume, and a stream of protest from the Alaska Company flowed in year after year to the government at Washington, which in 1881 was goaded into officially reversing its former contention, and declared Bering Sea east of the treaty meridian of 1867 American waters; but took no further step till 1886, when under President Cleveland it seized and condemned three Canadian sealers. Great Britain protested, and proceedings were suspended pending discussion; but in 1887 five more were seized, and the question at once became a matter of serious diplomacy. Secretary Bayard attempted to convene delegates from Great Britain, France, Germany, Sweden, Russia and Japan to meet with our own and frame regulations to prevent the extirpation of the northern seals; but in June 1888 Great Britain withdrew, under pressure from Canada. In 1889 several more Canadian vessels were seized, and Great Britain sent a practical menace of war if this were not stopped. There being but three alternatives, abandonment of the sealing interest to destruction, which the country would not endure; seizure of all poaching vessels, which meant war; and arbitration — the latter was decided on in 1890. The same year the Alaska Company, its lease expired, was succeeded by the North American Company: the herd, estimated in 1867 at over 3,000,000 on the Pribilof Islands, had shrunk so enormously under the pelagic sealing that the price had risen from $2.50 to $30 per skin, and the new company's limit of capture was restricted to 20,000, with a royalty of $10 a skin. On 15 June 1891 a modus vivendi was agreed on for joint policing of Bering Sea by British and American vessels; and on 29 Feb. 1892 a treaty of arbitration was signed, under which on 23 March 1893 a tribunal met at Paris, composed of Baron de Courcel (France), Marquis Emilo Visconti-Venosti (Italy), Judge Gregers W. W. Gram (Sweden-Norway), Lord Hannan (England), Sir John S. D. Thompson (Canada), Justice John M. Harlan and Senator John T. Morgan (United States). The United States case was conducted by the Secretary of State (John W. Foster); counsel, Edward J. Phelps, James C. Carter, Frederick R. Coudert and Henry Blodget. The decision on the logical points was entirely against the United States; Bering Sea was held part of the high seas and no one's preserve, and seals *feræ naturæ* and no one's property. But on the point of equity in our case, that the preservation of the seals from extinction was a common interest of the civilized world, it agreed with us and framed regulations binding for five years to prohibit all pelagic sealing within 60 miles of the Pribilofs, or from 1 May to 31 July in the north Pacific east of 180° or north of 35°, with other regulations. The restrictions proved absurdly ineffective, and Great Britain would not antagonize Canada to make them less so; in 1894 the pelagic catch was the enormous one of 142,000, far beyond any former record, and for several more seasons was very great, till the herds showed signs of rapid exhaustion. Great Britain obstinately refused to make any change in the regulations till the five years were up, sent an expert to the spot who laid all the blame on the North American Company, and refused to send a delegate to meet those of Russia, Japan and the United States, who agreed to prohibit pelagic sealing to their subjects if Great Britain would do so. Meantime, to put pressure on the latter, Congress prohibited the importation of all sealskins except the North American Company's, in order to destroy the market for Canadian-caught skins and make their business unprofitable; but England still refused to agree to the provisional treaty, on the ground that it would injure Canada, was not necessary to protect the seals and that the North American Company was solely in fault. But on 18 Nov. 1897 a joint meeting of English, American and Canadian experts was held, and unanimously supported the American con-

tention at every point, that the herds had diminished by from 66⅔ to 80 per cent, and markedly so even from 1896 to 1897; that the North American Company was handling its business with entire propriety; that pelagic sealing, involving the killing off of the females, was the sole cause of the reduction, which was threatening the entire extinction of the fur seal. Another year would bring about the time for changing the Paris regulations, and the United States agreed to prohibit all seal killing, even on the Pribilofs, for a year, but Canada would not consent because it would scatter the crews of her sealing fleet. Meantime, Congress on 14 June 1898 appropriated $473,151.26 to pay for the Canadian vessels seized years before. On 30 May 1898 a joint Canadian and American commission was authorized; it met at Quebec in August, adjourned to November at Washington, continued till February 1899, adjourned to the summer and did not reassemble. Most unfortunately, its scope included all the questions at issue between the two governments: the sealing problem became entangled at the outset with impossible bargains for general commercial reciprocity, then with the Alaska boundary question (q.v.) made acute by the Klondike gold discoveries, and at the adjournment not a single issue before it had been decided. The Paris regulations had expired, no new ones had been established, and the seals were left wholly without protection; while even so, as the United States forbade pelagic sealing to its citizens while England did not, all the profit of the perishing industry was being reaped by foreigners. The Canadian fleet of 1899 numbered 26 vessels, that of 1900 numbered 33, with a catch of over 35,000 each year, considerably more than half females. The same conditions continuing, the North American Company increased its efforts in order to obtain its share while the seals lasted; and in the Congressional session of 1901–02 it was seriously proposed to kill off the entire herd at once, and thus end the question by putting an end to the seals. In 1911, an international agreement provided for the conservation of the seal industry. See ALASKA: COMMERCIAL DEVELOPMENT — FUR-SEALS. Consult Henderson's 'American Diplomatic Questions' (New York 1901); Stanton's 'Bering Sea Controversy' (New York 1892); Snow, 'Treaties and Topics in American Diplomacy' (Boston 1894). See UNITED STATES — DIPLOMACY OF THE.

**BERING STRAIT and ISLAND.** The strait is the channel that separates Asia from America, and connects the north Pacific with the Arctic Ocean. Its breadth at the narrowest part, between Cape Prince of Wales on the American coast and East Cape in Asia, is about 36 miles, and its depth in the middle varies from 29 to 30 fathoms. On both sides are several commodious bays; but the country is barren and rocky, with scanty vegetation. The sea here is frozen over every winter, and foggy, hazy weather is almost perpetual. Whales frequent the strait, and the walrus occurs in vast numbers. The inhabitants on either shore support themselves chiefly by hunting and fishing; but those on the Asiatic side are greatly superior, both physically and intellectually, to those on the American. The strait is called after Vitus Bering, by whom it was first discovered. It was more fully explored by Captain Cook in 1778. BERING ISLAND is in the southwest part of the above sea, off the coast of Kamchatka. It is uninhabited, and is without wood. It has, however, several springs of excellent water. Here the navigator Bering died in 1741.

**BERINGTON, Joseph,** English Roman Catholic theologian: b. Shropshire 1746; d. Berkshire, 1 Dec. 1827. He was a Catholic liberal, who agitated for the repeal of the tests. In 1779 he published a letter to Fordyce on his 'Sermon against Popery.' His other works include 'State and Behavior of English Catholics from the Reformation till 1780' (1780); 'An Address to the Protestant Dissenters' (1786); 'History of Abelard and Heloise,' with their genuine letters (1787); 'History of Henry II' (1790); 'Memoirs of Gregorio Panzani,' papal legate to England in 1634–36, translated from the Italian (1793); 'The Faith of Catholics' (1813), and 'A Literary History of the Middle Ages' (1814).

**BERIOT,** bā-rẹ-ō, **Charles Auguste de,** Belgian violinist: b. Louvain, 20 Feb. 1802; d. there, 20 April 1870. He studied with Robbrecht and Tiby, and, in Paris, with Baillot; and became a professor in the Conservatory in Paris and in that of Brussels in 1842. In 1836 he married the celebrated singer, Malibran. In 1851 failing eyesight obliged him to resign. He composed a complete manual for the violin (1858) and wrote seven concertos and a great number of popular compositions, all distinguished by refined taste and great brilliancy. He showed a great advance over his predecessors in his treatment of the instrument. His splendid technique and eminent qualities of composer made him the head of the Belgian school of violinists, which through him and his pupils became justly famous.

**BERISLAV,** bā'rẹ-slăf, or **BORISLAV,** Russia, a fortified town on the Dnieper River in the government of Kherson, 46 miles northeast of Kherson. The trade in grain is considerable. The Turks are supposed to have founded a town here in 1450 which they named Kizi-Kerman. Peter the Great wrested it from them in 1696, and later it was named Berislav. Pop. about 12,000.

**BERKELEY, George,** English philosopher and bishop: b. Kilcrin, Ireland, 12 March 1685; d. Oxford, 14 Jan. 1753. He was educated at Trinity College, Dublin, where he took a keen interest in the philosophical problems then under discussion. He received the degree of A.B. with honors in 1704, being afterward successively scholar and fellow. Almost immediately he began his career of authorship. He published in 1709 his first important work, the 'New Theory of Vision,' which is the logical preliminary to his system and gives expression to certain of its fundamental principles. A year later his philosophy finds complete statement in the 'Treatise Concerning the Principles of Human Knowledge.' During the next 15 years Berkeley advanced to a position of prominence in the English Church. In 1711, shortly after his ordination to the diaconate, he published his 'Discourse on Passive Obedience,' a treatise upon ethics, in which he develops a system of theological utilitarianism. The 'Dialogues,'

published in 1711, presented his philosophy in literary form, clothing subtle argument in a garb of rhetorical beauty. In the years immediately following, several new works appeared, accompanied by increasing fame and prosperity. He was appointed successively to the deaneries of Dromore and of Derry, the latter of which yielded a large income. But this he resigned in order to devote himself to a plan for the establishment of a college in the Bermudas, where the Indians of America were to be enlightened and christianized. For the furtherance of such a plan he obtained a promise from the government for a grant of £20,000. Upon the strength of this he sailed for America in 1728, accompanied by his wife and a few friends. They went first to Rhode Island, where they planned to await the expected grant. Here Berkeley purchased a farm and waited three years in quiet and study. Finally, upon the failure of the government to make good its promise, he was compelled to give up his cherished plan and return to England in 1731. Soon after his return he was made bishop of Cloyne. During the remaining years of his life he published a number of works upon philosophy, economics and other subjects. Notable among these were 'Alciphron, or the Minute Philosopher,' the result of his quiet studies in Rhode Island, and 'Sirus,' a remarkable essay in which the author interweaves his convictions concerning the healing properties of tar-water with the deepest and most profound of his philosophic reflections.

Although the representative English idealist, Berkeley proceeds in his thought from the empirical philosophy of Locke. It was Locke's contention that in knowledge we are concerned with our own ideas only, and that these ideas are derived entirely from experience. He made an important distinction among these ideas, however, with reference to their representation of objective or material reality. Ideas of color, sound, taste, etc., called secondary qualities, are subjective processes, and reveal nothing of the nature of material reality. But ideas of extension, figure, motion, etc., called primary qualities, reveal directly the nature and constitution of that reality which exists without the mind, in the material world. Berkeley agreed with Locke that we know only our own ideas, but he attacked vigorously this distinction between primary and secondary qualities. He maintained that ideas of primary qualities are wholly subjective, and tell us no more of the nature of material reality than do our ideas of secondary qualities. He attempts a partial proof of this in his 'New Theory of Vision,' by showing that distance, magnitude and situation are not directly perceived by sight, but are inferred in an indirect manner. These ideas of distance, magnitude and situation are results of judgment based upon visual sensations. Such visual sensations have no essential relation to the ideas in question, however — they are simply associated with them in experience. For example, consider our idea of distance. We find connected with this idea: (1) Sensation of movement in the eye; (2) confusion in vision due to nearness of the object, and (3) strain of fixation. These sensations are associated by custom with degrees of distance. Hence we have in this idea of distance no direct revelation through vision of the nature of material reality. Rather we have the product of our own judgment, based upon sensations which have themselves no objective reference. So it is with other ideas of primary qualities which have been held to bring us into immediate contact with material reality. In ideas of figure and motion we have sensations of light, color and strain, and the remainder is due to association and judgment. Thus Berkeley concludes that we have in visual ideas not a revelation of the nature of matter, but a universal language of symbols whereby we interpret our sensations of touch, and so regulate our actions as to preserve and promote our lives. In his 'Treatise Concerning the Principles of Human Knowledge,' he uses this conclusion to disprove the existence of a material world apart from, and independent of, the perceiving mind. The very notion of matter or corporeal substance involves insoluble contradiction. By matter is meant inert, senseless substance in which extension, figure and motion reside. But these so-called attributes of matter are ideas in the mind, and are shown to be every whit as subjective as ideas of colors and tastes. Now ideas can be similar only to ideas. Hence to suppose that our ideas copy or represent a material substance that is unperceiving and unperceived, is a crass absurdity. Ideas are the only objects of our thought. To exist as an object is to be perceived. (*Esse est percipi.*) Although confined to our own ideas, we may observe their various characteristics and combinations. Sense qualities are simply states of consciousness. Sense-objects are sensation-complexes. There is in our consciousness a continuous succession of these perceptions, in which we perceive perceptions newly excited, perceptions changed and perceptions obliterated. For all these phenomena there must be some cause. This cause cannot be an idea or combination of ideas; for it is the appearance and arrangement of ideas which must be explained. This cause must be a substance, a ground of existence. Matter, or corporeal substance, is an impossibility. We are compelled, therefore, to find the cause of our ideas in an incorporeal, active substance or spirit. But we observe an important difference in the production of our ideas. Those ideas actually perceived by the senses of the individual are not dependent upon his own mind or will. Hence there must be some other will or spirit which produces them. This is God, the Author of Nature. The ideas of sense are imprinted upon our minds by the direct influence of the Divine Mind. Hence they are strong, orderly and coherent. Their source guarantees their trustworthiness, and with good reason they may be called "real things." In this way our knowledge acquires an objective validity much more adequate than if our ideas were aroused by the action of a material substance upon our sense-organs. The laws of nature, which we properly regard, represent the regular operation of the Divine Mind upon our minds. There is consequently no difficulty in distinguishing the order of ideas which is real and objective, from the train of subjective fancies and imaginations.

**Bibliography.**— The best edition of Berkeley's works is that by Fraser (2d ed., Oxford 1902), containing a 'Life.' Consult further

Fraser's briefer 'Life' (London 1881; new ed. 1901; in 'Philosophical Classics'); Frederichs, 'Ueber Berkeleys Idalismus' (Berlin 1870); Spicker, 'Kant, Hume und Berkeley' (Berlin 1875); Janitsch, 'Kants Urtheil über Berkeley' (Strassburg 1879); Penjon, 'Etudes sur la vie et les œuvres philosophiques de Berkeley' (Paris 1878); Stephen, Sir L., 'English Thought in the Eighteenth Century' (1902); Fullerton, G. S., 'System of Metaphysics' (New York 1904). For Berkeley's visit to America consult Tyler, M. C., 'Three Men of Letters' (New York 1895).

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**BERKELEY, George Charles Grantley Fitzhardinge,** English writer: b. 10 Feb. 1800; d. Poole, Dorsetshire, 23 Feb. 1881. In 1832–52 he was a member of the British Parliament and for a time he was in the army. He visited America in 1861. His 'My Life and Recollections' (1864–66), an extensive work, attracted some attention. Among his further works are 'Berkeley Castle' (1836), adverse criticism of which in *Fraser's Magazine* led Berkeley to assault the publisher and fight a duel with the critic, Dr. William Maginn; 'Sandron Hall, or the Days of Queen Anne' (1840); 'The English Sportsman on the Western Prairies' (1861); 'Anecdotes of the Upper Ten Thousand at Home and Abroad' (1867); and 'Tales of Life and Death' (1870). He was the last person who wore the flat cocked hat known as the chapeau bras. Consult his 'Recollections' and also 'Men of the Time' (7th ed).

**BERKELEY,** Sir **George,** English engineer: b. London, 26 April 1821; d. there, 20 Dec. 1893. In 1835 he began experimenting with methods for operating atmospheric railways. In 1841 he associated himself with Robert Stephenson and continued his experiments. On Stephenson's death he became engineer of the Great Indian Peninsular Railway. In 1892 he was made president of the Institute of Civil Engineers. He wrote papers on atmospheric railways and on the strength of iron and steel; and was knighted in 1893.

**BERKELEY,** Sir **John,** English nobleman, one of the proprietors of New Jersey: b. 1607; d. 28 Aug. 1678. He was a prominent Royalist during the contest of Charles I with Parliament. Charles II granted him, with Sir George Carteret, a proprietary interest in New Jersey and Carolina.

**BERKELEY, Miles Joseph,** English botanist: b. Biggin, Derbyshire, 1803; d. Sibbertoft, Leicestershire, July 1889. Educated at Christ Church, Oxford, he took orders, was curate at Margate (Kent) and Market Harborough (Leicestershire), and subsequently was made vicar of Sibbertoft. He soon became the leading British authority on fungi and plant pathology and was especially well known for achievements in mycology. About 6,000 species of fungi are credited to him; his most important work was the section on fungi contributed to Hooker's 'British Flora' (1836) and his 'Outlines of British Fungology' (1860), and he assembled a fine herbarium of more than 9,000 species, now at the Kew Gardens and regarded as one of the most noteworthy in the world. A bibliography may be found in the 'Catalogue of Scientific Papers' of the Royal Society. Consult also 'Proceedings of the Royal Society' (Vol XLVII, 1890) for a sketch by Hooker.

**BERKELEY,** Sir **William,** American colonial governor: b. near London about 1610; d. 13 July 1677. His father and brother were colonial proprietors. Graduating from Oxford 1629, he traveled on the Continent for a year; was appointed a commissioner of Canada 1632 and won a high reputation there. In 1641 he was made governor of Virginia, and arriving in 1642, was for a time very popular. He experimented in the cultivation of rice, cotton, indigo, hemp, flax and silk, the manufacture of potash and naval stores and the cutting and exporting of masts; pleased the Royalist party by expelling the New England Puritans in 1643, and all parties by capturing the Indian chief Opechancanough in 1644, after a series of Indian massacres. Always with an eye to profit, however, he received from the King a monopoly of the fur trade. During the English revolution he adhered to the royal side and offered an asylum in Virginia to exiled or dissatisfied Royalists; many hundreds availed themselves of this. When Cromwell felt strong enough he sent a fleet (in 1651) to bring him back for punishment; but Berkeley succeeded in making certain terms by mingled "bluff" and finesse and was allowed to retire in safety to his plantation, though deprived of his office. When the Restoration began to seem probable, the colonists elected Berkeley as governor to gain favor in such event; Berkeley accepted it provisionally and Charles II on accession confirmed it. But in this second term all Berkeley's evil side showed itself, till it ended in the atrocities of 1676. Besides expelling and confiscating the goods of Puritans and Quakers, a measure popular at the time, he frowned on the establishment of schools and absolutely refused to have a printing-press set up, as making people too censorious of their superiors. He formed a council of the wealthier planters and having obtained during the spasm of Restoration loyalty in 1662 an ultra-royalist house of burgesses, would not issue writs for another election for 14 years, simply adjourning annually the "Long Assembly," as it came to be called; and in 1670 abolished universal suffrage, substituting a property qualification, purely as a precaution for the future, as no elections were held for years before and after. These, however, were only means to the end of profiting himself and his friends and the rapacious crew of civil officers sent over by Charles to quiet the people's importunities. Heavy taxes and fees imposed on the colony drove them to desperation, so that as early as 1667 they were ripe for revolt. Besides Berkeley's share in various extortions, he had one monopoly which led directly to the catastrophe, that of the Indian trade, which he gained by underhand means. The colony allowed no trade with the Indians without license; Berkeley therefore licensed a small number of men to trade in furs with them, which secretly included liquor, firearms and other things and exacted a third of the profits. It was believed to be this gain which led him to refuse permission to the

colonists to protect themselves against the Indians in 1675–76, while hundreds of them were being massacred and tortured and scores of plantations laid waste, and to dissolve force after force assembled to protect them. How Nathaniel Bacon chastised the Indians in spite of him, was proscribed for it, forced into open rebellion, drove Berkeley into retreat and burned his capital, and died at the moment of his victory, is told under 'Bacon's Rebellion.' Berkeley's soul was as full of senile fury as it had been of senile avarice; he slaughtered right and left, hanging a score of victims with such vindictive haste and ruffianly insult that the assembly remonstrated, and the royal commissioners, who came in January to investigate the condition of the colony, made a report that led the King to remove him, with the comment, "The old fool has put to death more people in that naked country than I for the murder of my father." He sailed 27 April, his departure celebrated with bonfires and salutes of cannon; and expected to justify himself to the King and return. But Charles kept postponing an interview and in a few weeks Berkeley died — of chargin, it was believed. He wrote 'The Lost Lady' (1638) and 'A Discourse and View of Virginia' (1663).

**BERKELEY**, Cal., city in Alameda County, on San Francisco Bay, nine miles northeast from and directly opposite to San Francisco and the Golden Gate. A channel with a constant depth of 42 feet leads straight from the Berkeley waterfront clear out through the "Gate," into the Pacific Ocean, affording facilities unsurpassed anywhere in the neighborhood for a projected great docking warehouse and railway district and for an important auxiliary naval base or station. Berkeley is a motoring centre. You may use your automobile every day. Starting from Berkeley you will find well-kept boulevards that reach to all parts of the county and to interior points in California. The Lincoln Highway, the Midland Trail and the Pike's Peak Ocean-to-Ocean Road all pass through Berkeley. Owners of machines declare this city to be an ideal rendezvous for tourists. As a summer home Berkeley cannot be excelled. The average temperature in summer is about 59° F. In winter the average is about 48° F., giving a range of something like 11° for the year. This equable climate is beneficial to health. It is particularly good for children who live out-of-doors the year round. Berkeley is just south of lat. 38 N., 375 miles south of the latitude of Marseilles, 400 miles south of the latitude of Nice, Cannes, Mentone and the famous Riviera, all boasting so many attractions of climate; on the latitudinal line of southern Sicily, southern Greece and Smyrna. To this geographical position and the favorable topographical formation of the surrounding country must be attributed the enjoyable climatic conditions that prevail in Berkeley. The average rainfall is about 25 inches. During the summer and autumn months gentle fogs or mists prevail that are charged with health-giving ozone. Electric lines connect with Oakland the county-seat adjoining Berkeley, and with San Francisco, which is also connected by ferry service. Two transcontinental railroads, the Southern Pacific and the Santa Fé systems, pass through Berkeley. The city's fame rests primarily on its established character as a home place, the favorite residence of many San Franciscans, to which its attractive location and scenic surroundings have contributed. That character it still maintains, with added qualities which enhance its attractiveness and the prominence which it has attained latterly because of the advantages that it offers to manufacturers. Climatic conditions conduce to efficiency. Even when paid higher wages for fewer hours, workers here return a greater profit to the factory per unit than operatives in any other location, because operatives are able to keep employed every working day of the year, with no interruptions on account of excessive heat or cold. Besides this, Berkeley enjoys a low rate for electric power — as low as any city in the country, not even excepting Niagara Falls; fuel oil for motive machinery is also procured at small cost, because of nearness to the terminals of the pipe lines; level land and reasonable prices provide for factory sites; water competition insures moderate freight rates by rail; while railroad facilities and the liberal policy of the municipal authorities govern spur tracks and like accommodations. Above all, the civic and social conditions prevailing in the city,— Berkeley has neither a saloon nor a disorderly house within its boundaries,— are big physical points in its favor with companies and corporations which, along modern lines, devote thought and care to clean surroundings for their employees and those dependent on them. Twenty new factories were established in Berkeley since the year 1915 and options on many other sites were obtained by several companies. The leading manufactures of Berkeley include aeroplane and other motors, hydraulic machinery, health foods, soaps, refined petroleum, cocoanut oil, carbonic gas, elevators, pumps, etc. The survey of manufactures for 1917 recorded 107 industrial establishments of factory grade, employing 2,350 persons, of whom 1,828 were wage earners, receiving annually $3,054,000 in wages. The capital invested aggregated $9,814,000 and the value of the year's output was $7,321,000: of this, $2,532,000 was the value added by manufacture. It also carries on lucrative fishing industries. As a dependable barometer of business the upward tendency of the city's postal receipts indicates continuous and growing prosperity. From $112,444 in 1910 they had increased to $190,338 in 1917. Property returns for taxation also increased from $35,736,140 in 1910 to $45,000,000 in 1917. Not a single dollar on current account was due to any city creditor and the bonded indebtedness amounted to only $1,266,075. As Berkeley has authority under the law to incur bonded indebtedness aggregating more than $5,000,000, the city's paper is regarded as gilt-edged by the financial experts of the country. A new and ample sewer system has been installed at a cost of $700,000. An efficient fire department is maintained, with nine stations serving the city's area of nine square miles. The department is completely motorized, operating 16 cars. Double platoon system for the department has brought more expense, but also has insured better service, as the men are on full pay, with no call men. Berkeley was the first city in the West to introduce the golden rule of the po-

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lice department, impressing on patrolmen the duty to befriend unfortunates wherever possible. The consequence is that there is less disposition to lawlessness than in cities where the stern hand of authority is never relaxed even in trivial affairs. There were only four arrests for drunkenness in Berkeley during 1915; eleven in 1916, and seven in 1917. The total arrests in the city in 1915 were 291; in 1916, 307; in 1917, 333. The death rate in 1915 was 7.75 per thousand, which was above the figure of several previous years, on account of the number of elderly people who retire here to enjoy their declining years. The city is the home of a great many men and women above the age of 80 years. Death rate in 1916 was 7.34; in 1917, 7.52. Race suicide does not exist in Berkeley. The average birth-rate per thousand is 11.36 and childhood in Berkeley is blessed with favorable conditions, the little ones living in the open air almost constantly. The result is a vigorous lot of youngsters. This is shown by the way in which school children win championships in the various sports which bring them in competition with students from other parts of the State. In 1915 Berkeley built and equipped five new school buildings at a cost of over half a million dollars. These are located in different parts of the city for the greater accommodation and convenience of parents and pupils. The equipment of these schools is modern in every particular. Berkeley is the acknowledged educational capital of the Pacific coast. The city is not surpassed in this by any other community west of the Rocky Mountains. This is true in respect to all departments of instruction, from kindergarten to the University of California, which has its home here. This university ranks with the great seats of learning in the world. Situated in beautiful grounds covering 250 acres, new buildings at a cost of $2,000,000 are being added to the existing structures. (For full description see CALIFORNIA, UNIVERSITY OF). In Berkeley also are located the California School of Arts and Crafts, the Cora L. Williams Institute for Creative Education, the State School for the Deaf and the Blind, White's School for Boys, Miss Head's School for Girls, Saint Joseph's Academy for Boys, Saint Joseph's Presentation Academy for Girls, the A to Zed School, the Berkeley Business College, the South Berkeley Business College, the Pacific School of Religion, the Berkeley Baptist Divinity School, the Pacific Unitarian School, the Berkeley Outdoor School, the Berkeley Kindergarten and several musical and art schools; also public and school libraries. As a genuine musical centre also, Berkeley is attractive to all who are musically inclined. The Berkeley Musical Association, which has a membership of 2,000, gives four or five events a year, the artists being of international fame. The Berkeley Oratorio Society presents two concerts a season at which students are accorded liberal concessions. Club life in Berkeley is attractive by reason of variety. There are three kinds of clubs: clubs for men; clubs for women; and clubs to which both men and women are admitted. All of these devote much time and attention to the serious affairs of life. This is particularly true of the women's clubs of Berkeley which are merely social organizations, although the society of the community is a highly developed organism. Women here devote much attention to civic betterment and public affairs, as befits their character as voters and law makers. While the natural advantages of Berkeley are highly prized by the citizens and although they undoubtedly attract a great many of the thousands who are coming here annually, yet the real lure of Berkeley is its characteristic hospitality. All comers are welcomed with a broad spirit of Western comradeship that is most inviting. The schools, art institutes, civic centres, fraternal organizations, religious societies and social conditions tend to elevate and enrich the lives of those who come here. In all the world there is not a more cosmopolitan community — cosmopolitan in the best sense — that of equal opportunity and equal respect. Character and personal worth are what count in fixing the status of the individual or the family in this community. The settlement of Berkeley dates from the selection of the university site in 1868. The town was incorporated in 1878 and adopted the commission form of government in 1909. Pop. (1900) 13,214; (1910) 40,434; (1918) 63,000. In view of Berkeley's fame as an educational centre it is proper to mention that the city was named in honor of Dr. George Berkeley, Dean of Derry and lord bishop of Cloyne, the gifted scholar and philosopher, author of the oft-quoted line, "Westward the course of empire takes its way."

WELLS DRURY,
*Secretary Berkeley Chamber of Commerce.*

**BERKELEY,** England, market town, 17½ miles southwest of Gloucester, pleasantly situated on the right bank of the Avon, in the rich vale of Berkeley, and celebrated for its castle, where Edward II was confined and barbarously murdered in 1327.

**BERKELEY DIVINITY SCHOOL,** an Episcopal theological school at Middletown, Conn. It was organized in 1851 by Bishop John Williams of Connecticut while he was president of Trinity College, at Hartford, and was at first intended to be the theological department of the college. It was later (1854) placed upon an independent basis and removed to its present location. The chapel was built in 1851, and the library in 1896. The graduates on the roll of the seminary number (1913) 525, of whom 335 survive, including 20 bishops and many of the best-known clergymen of the Episcopal Church. There are about 30,000 volumes in the library. The value of its buildings is about $100,000, and its endowment fund aggregates $485,000.

**BERKELEY SOUND,** next to Stanley Sound the most frequented inlet of the East Falkland Island, near its northeast extremity. Though it is difficult to enter, it contains some of the best harbors in the south Atlantic.

**BERKELEY SPRINGS,** W. Va., town and county-seat of Morgan County, two miles south of the Potomac and 103 miles northwest of Washington, on a branch of the Baltimore & Ohio Railroad. It is in an agricultural region, tomatoes and fruit being extensively raised, and has been widely known and popular for more than a century because of its mineral springs. The site of the town was a part of the vast

estate of Lord Fairfax, and Washington owned considerable property here. It is the oldest pleasure resort in the South, and as far back as the colonial days the gentry of Virginia came here in warm weather and lived in log huts in order to enjoy or be benefited by the baths and swimming pools. Mount Wesley Academy is situated in the town, and there are handle and canning factories, a planing mill and sand pulverizing plant, extensive deposits of silica sand being in the vicinity. Berkeley Springs was incorporated in 1872. Pop. 864.

**BERKENHOUT, John,** Dutch-English physician and general writer: b. Leeds, about 1730; d. 1791. Having entered the Prussian service, he rose to the rank of captain. In 1756 he quitted that service and entered into that of England, where he obtained the same rank. At the peace in 1760 he went to Edinburgh and began the study of physic; while there he published his 'Clavis Angelica Linguæ Botanicæ,' a book of great merit, and later his 'Pharmacopœia Medici,' which passed through three editions. Other works by him are 'Outlines of the Natural History of Great Britain and Ireland' (3 vols., 1770); 'Essay on the Bite of a Mad Dog' (1773); 'Symptomatology' (1774), etc. In 1778 he attended the British commissioners to America, and at Philadelphia he was committed to prison, but he soon afterward was set at liberty, and returned with the commissioners to England, where he obtained a pension. He was an industrious writer, and his publications possess considerable merit. Consult Rose, 'New Biographical Dictionary.'

**BERKHAMPSTEAD,** bĕrk'hăm-stĕd, or **BERKHAMSTED, Great,** an urban district, parish and marked town in Hertfordshire, England, beautifully situated in a hollow surrounded by hills, on the London & N. W. Railway, 28 miles north of London. It consists almost wholly of one main street, and has a fine old church, restored 1871–87; several chapels and Berkhamsted School, with a fine chapel (1895). There are works for wooden ware, a large chemical work, a boat-building yard, brush, coach and mantle factories, an iron foundry, etc. The poet Cowper was born here in 1731. In the small parish of Little Berkhampstead, some miles to the north, the famous Bishop Ken was born. Pop. 7,302.

**BERKHEY,** bĕrk'hī, **Johannes Lefranca van,** Dutch writer and naturalist: b. Leyden, 3 Jan. 1729; d. there, 13 March 1812. He was early interested in natûral history and also studied Latin and Greek. Poetry he reserved for his leisure moments. He resided successively at Amsterdam, Leervliet and Leyden, where he was professor at the university. His later years were passed at The Hague. Among his principal works are 'Expositio Characteristica florum qui dicuntur compositi' (Leyden 1761); 'Letter on the Generation of the Testaceæ'; 'Notes on the Best Methods of Preparing the Lands of Holland, both Upper and Lower, so as to Cultivate Them to the Best Advantage'; 'Natural History of Holland' (6 vols., Amsterdam 1769). He also distinguished himself as a poet, though he often manifests a tendency to bombast, and indulges in false pathos. One of his best poems is entitled 'Het Verheerligkt Leyden.'

**BERKSHIRE,** England, an inland county, lying in the valley of the Thames, with an area of 450,132 acres or 712 square miles. Its shape is very irregular, and has been compared to that of a shoe or slipper. A range of chalk hills crosses the country in a westerly direction, and forms a boundary to the fertile vale of Whitehorse, so called from the gigantic form of a horse which has been scooped out on the side of a chalk hill, so as to become conspicuous to all the country round, referred to in Thomas Hughes' 'The Scouring of the White Horse.' The cultivated parts of the county, and more especially this vale, are peculiarly fruitful in barley. They also contain much rich pasturage and many excellent dairy farms. Timber abounds, particularly oak and beech, in Windsor Forest and toward the west. Turnips are an important crop. There are but few manufactures carried on in this county, the principal being agricultural implements and artificial manures, flour, paper, sacking and sailcloth, and biscuits (at Reading). Malt is made in great quantities, and chiefly sent to London. The principal towns of Berkshire are Reading (the county town), Newbury, Maidenhead, Wokingham, Wallingford, Windsor, Abingdon, Wantage and Farringdon. Including the boroughs of Windsor and Reading the county returns five members to Parliament. Pop. (1911) 280,794. Consult Graves, 'The Way About Berkshire' (1898).

**BERKSHIRES, The,** or **BERKSHIRE HILLS,** a range of mountains in the northwest of Massachusetts, in Berkshire County, stretching 16 miles north and south on the east of the valley of the upper Hoosac River. They are a favorite summer and autumn resort. The highest summits are Greylock in the north, 3,535 feet, and Mount Everett, or the Dome, in the south, 2,635 feet.

**BERLAD,** bĕr-lăd', Rumania, a town on the Berlad River, and Teucuci-Baslui Railroad, in the district of Tutova, about 68 miles northwest of Bucharest. It is the trade centre of a grain-raising district and has many distilleries. It is a well-built town, with good schools, a theatre, a hospital and a number of institutions for secondary education. Pop. 25,381.

**BERLEBURG,** bĕr'lĕ-boorg, or **BERLEBURGER BIBLE,** a translation of the Scriptures published at Berleburg, Germany (8 vols., 1726–42). Its unknown editors have given an original version with accompanying exposition more or less mystical in character. It has all the merits and demerits of pietism.

**BERLICHINGEN,** bĕr'lĭH-ĭng-ĕn, **Götz,** or **Gottfried von,** German soldier of fortune: b. Jagsthausen 1480; d. 23 July 1562. He was a bold, restless, warlike and honorable knight. At first he served Elector Frederick of Brandenburg, but soon joined himself to Albert of Bavaria. He lost his right hand in 1504, at the siege of Landshut, and in its stead wore an iron one, being thereafter known as Götz of the Iron Hand. He was continually engaged in quarrels with his neighbors, disregarded the edict against private warfare and was twice under the ban of the Empire — in 1512 and 1518. He placed himself at the head of a body of the rebellious peasants, in the war which they waged against their oppressors, but was

soon made prisoner. On promising to refrain from further warfare he was released after two years. For many years he was inactive, but in 1542 he took part in the Hungarian campaign against the Turks, and two years later fought for Charles V against the forces of Francis I. His biography, written by himself, was printed in Nuremberg in 1731 and 1775, and, for the third time, at Breslau in 1813. It was edited by Schönhuth (Heilbronn 1859) and by Müller (Leipzig 1882). This book contains an excellent picture of the social life and customs of the time, and has furnished Goethe with the subject of his drama, 'Götz von Berlichingen, translated by Sir Walter Scott. The best biographies of this typical feudal knight are: Götz, Graf von Berlichingen-Rossach, 'Geschichte des Ritters Götz von Berlichingen mit der eisernen Hand' (Leipzig 1861); and Pallman, 'Der historische Götz von Berlichingen' (Berlin 1894).

**BERLIN**, Canada, city and county-seat of Waterloo County, Ontario, on the Grand R. and the Grand T. railways, 62 miles west of Toronto. It was settled originally by German immigrants from the United States, and has rapidly developing manufactories of furniture, leather, boots and shoes, pianos and organs, buttons, gloves, etc.; excellent sewerage system, waterworks, street railway and gas and electric-light plants; a Roman Catholic college, and 15 churches. Pop. 15,196.

**BERLIN**, Conn., town of Hartford County, 11 miles south of the city of Hartford, on the New York, New Haven and Hartford Railroad. There are brick works and manufactories of paper goods. Pop. 3,728.

**BERLIN**, Germany, capital of the empire and of the kingdom of Prussia, 180 miles southeast of Hamburg. The river Spree, here nearly 200 feet wide, spanned by several fine bridges, flows through the centre of the city, communicating through the Elbe with the North Sea, and also having canal communication with the river Oder and the Baltic Sea.

**History.**— No account of the earliest settlement of Berlin has come down to us, but it is supposed that the city was founded during the decade from 1230 to 1240. Indeed, the Margraves John I and Otto III are said to have established the city as a stronghold against the Slavs. The name Berlin is probably of Slavic origin, although some scholars trace the word to "Bärlein," from the fact that a bear appears on the coat of arms of the city. The new city, or town, was situated on the old commercial highway which led from Leipzig to Stettin and was known especially as a market for herring, grain and wood. Cologne (Colonia), the near-by sister city on the river Spree, seems to have been established as an independent municipality simultaneously with Berlin and was united with Berlin, temporarily, in the year 1307. Though the margrave had his castle in the city, the municipal government was left to the mayor and aldermen, who enjoyed full sway.

In 1134 the mark of Brandenburg had come into the hands of Albrecht the Bear, of the house of Ascan, to which family also belonged the founders of Berlin, who ruled in common. After the extinction of this family (1323) the German emperor, Ludwig of Bavaria, gave Brandenburg to his son Ludwig as a fief, who in 1351 passed it to his brother, Ludwig the Roman. His successor, Otto the Lazy, sold the mark to the Emperor Karl IV (1373). Karl's son, the Emperor Sigismund, appointed Friedrich von Hohenzollern, Burggrave of Nuremberg, viceroy of the mark in 1411 and made him an elector in 1415. This increased dignity, which indeed had already been worn by Ludwig the Roman, gave the ruler of the mark an importance that redounded to the good of the country and of the city. The first Hohenzollern had a difficult position to fill, in that he had to put down a rebellious and, in part, thievish nobility. This nobility, especially the family of Quitzows, did great damage to the trade of Berlin (1406–10). Just as his father had had to contend with the nobility, Frederick II, the second Hohenzollern, had to fight against the populace of Berlin-Cologne. Soon after he undertook the government he began a strong citadel in Cologne, on the bank of the Spree.

This same citadel, enlarged and extended during the centuries, now serves the present emperor both as a residence, and as the palace where he receives his princely guests. With the building of the citadel the margrave removed to Berlin; and the result was that Berlin and Cologne had to surrender much of their authority to him. At first the cities had become involved in a dispute over constitutional and administrative matters and had called in Frederick II as arbiter; but soon they were quarrelling with the prince himself, and he defeated both of them.

Since Berlin-Cologne has been the residence of the Hohenzollerns the history of the city has been intimately connected with that of the reigning family. The rulers have always been particularly interested in building up the city. In this respect the work of the Great Elector, Frederick William (1640–88), was noteworthy. He added two new wards to the city, Friedrichswerder and Dorotheenstadt, built magnificent fortifications (though later these were removed), and summoned architects and engineers from Holland to finish the palace and lay out public grounds, as the Lustgarten and the Linden-promenade. His successor, Frederick III, the first king of Prussia, added to the city Friedrichstadt and other suburbs. Supported by artists like Schlüter and Eosander he enlarged and beautified the palace and gave the city a number of fine statues and public buildings, particularly the Zenghaus, which is one of Berlin's conspicuous monuments of architecture. The fine equestrian statue of the Great Elector, on the bridge near the palace is by Schlüter. Frederick William I was especially interested in building private residences. He made presents of building-lots and even furnished lumber gratis and made other concessions.

His son, Frederick the Great, turned his attention to the erection of new buildings in Potsdam, his favorite residence. After the Seven Years' War, in which Berlin had been burned twice, the King began, at great personal expense, the construction of houses for those who enjoyed his favor. External architectural beauty was aimed at, rather than convenience. Among the public structures erected by Frederick the Great may be mentioned the two domes of the German and the French church, the King's

Colonade and the Royal Library. In 1763 he established the Royal Porcelain Manufactory.

The famous Brandenburg Gate, a triumphal arch in classic style, was erected in 1793, during the reign of Frederick William II. It was ornamented by the sculptor Schadow with a bronze statue of Victory driving a four-horse chariot. When Berlin was taken by the French in 1807 this was taken to Paris, but was recovered in 1814 after Paris had been taken by the Allies. Under Frederick William III the present Royal Theatre and the Old Museum were built, and under Frederick William IV the statue of Frederick the Great. The wonderful progress made by Berlin during the reign of William I gave the city quite a different appearance in a short time. Buildings of a monumental character, both public and private, sprang up everywhere.

This development has continued; and the present Emperor has done all he can to beautify the city, chiefly with monuments and statues. Likewise the activity of private citizens along the same lines is now far greater than in former centuries. The great historical events which created the German Empire and made Berlin the capital of it found a happy echo in the populace. The new development of the city to the metropolis of the political life and of national and international trade has not been external and artificial as formerly, but has been internal and necessary. This fact cannot be set forth in an account of buildings and monuments. It would be necessary to examine the statistics of trade and commerce, of banking, and of the industries, etc. If one studies the statistics, then it becomes clear that those material aspects of the city that amaze one and compel admiration are only the manifestation of a powerful historical development, which cannot by any means be regarded as having reached its zenith.

**Area, Population, Suburbs, etc.**— Besides Cologne, other neighboring towns were built up later, as Friedrichwerder (with Friedrichstadt) and Dorotheenstadt. All four of these towns, though lying in immediate proximity to one another, remained completely independent of each other till 1709, when Frederick I fused them into one municipal corporation. At that time the population was about 57,000. Now, after over 200 years, we find a similar situation as regards a plurality of independent cities. Immediately adjoining Berlin there are some 20 completely independent municipalities of one kind and another. For the most part these towns and cities have, to all appearance, become fused with Berlin, and boundary lines have been obliterated; but each one has it own independent municipal government. As yet there is no centralized, unifying government to bind them together. The population of Berlin was in 1820, 202,000; in 1871, 826,000; and in 1910, 2,071,257, composed of 1,689,118 of the Evangelical faith, 243,020 Roman Catholics and 90,013 Jews. Among the contiguous cities may be mentioned Charlottenburg (305,978 inhabitants); Neu-Köln (formerly Rixdorf, 237,289); and Schöneberg (173,823). The area of Berlin is 15,696 acres, and of Greater Berlin 156,290 acres. The area of Berlin proper is much less than that of several other German cities, as for instance Cologne (27,750 acres), Frankfort-on-Main (20,000 acres), Strassburg (19,500 acres), Munich (18,570 acres) and Mannheim (16,500 acres).

There has been no considerable extension of the corporate limits of Berlin into this neighboring territory since 1860, though the necessity for such a proceeding has been urged repeatedly in various quarters. To do this, and thus effect a union of these several municipalities, the consent of both the state government and the Parliament is necessary. For a long time the Prussian government was inclined to carry out such a plan, but the city of Berlin objected to assuming the burden which the poor condition of the streets and public utilities of the suburbs would have imposed upon her. At present the state government encourages the incorporation of the smaller country suburbs into towns, and sooner or later all these elements, large and small, will be brought together under one municipal government.

The present fragmentary condition of the city entails upon Berlin many practical difficulties. For instance, the city has bought in the suburbs not less than 14,200 hectares of land for the utilization of the sewerage, and the laying of pipes through these neighboring municipalities often gives occasion for long and tedious negotiations. Similar difficulties have formerly attended the construction of street-car lines. In every case the company in question has had to secure a concession from every suburb concerned. This always involved long negotiations as to details.

**Municipal Government.**— The administration of the city of Berlin is in the hands of a municipal council of 34 members, including the mayor. Half of these fill honorary positions, half receive pay. Among the salaried members may be mentioned the chief mayor (Oberbürgermeister), the mayor, two syndici, a minister of finance, two school commissioners and two commissioners on buildings. The members of the council are elected, for a limited period, by the board of aldermen. The aldermen themselves are elected by vote of the citizens. The sessions of the council are secret; those of the board of aldermen are usually public. All important innovations require the consent of both bodies. Besides, there are a number of committees, composed of members of the council and of the board of aldermen. In certain branches of the administration the authority of these committees is competent, but in important matters transcending their special departments their authority is conditioned by the consent of the municipal council.

The aldermen, 144 in number, receive no salary, their position being honorary. They are represented by a chairman and his deputy. A further category of honorary and unsalaried officials is formed by the citizen-deputies, who are elected by the board of aldermen; also the poor law guardian and the members of the poor commission. Altogether, there are several thousand persons working for the city without any salary. The city police force is employed and controlled by the state, under the Ministry of the Interior, but the city has to make appropriation for this object.

**Finances.**— The city budget for 1910–11, amounted to $75,000,000 and the indebtedness in 1904 was $351,000,000.

The receipts come mainly from taxes, in-

## BERLIN

1 Lust Garten, showing Statue of Frederick William III

2 Brandenburg Gate

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1 Schlossbrücke, with Lust Garten

2 Palace of Emperor William I

cluding income tax — levied on incomes just as the corresponding state tax — the special tax on incomes derived from trade, taxes on real estate and real estate transfers, and for sewerage purposes. The citizen of Berlin pays on an average not less than $25 a year in taxes.

**Public Utilities.**— The gas plant is municipally owned. The street lighting system covers an area of 320 miles. The water supply is entirely in the hands of the city. There are several waterworks, the water being obtained in part from deep wells. Other wells are to be bored soon. Sewerage is also provided for by the city, the waste being brought through pressure pipes to the city's farms in the country, where it is prepared for agricultural purposes. The sewage and drainage system, begun in 1873, was completed in 1911 at a cost of upwards of $42,000,000.

The city has a stock-yard, which serves as a general market for live stock, also a slaughter-house, where all slaughterings must take place. Here the fresh meat is at once officially inspected. All meats shipped into Berlin are inspected, unless an official inspection has taken place elsewhere. There are 14 city market-houses for the retail trade and one special market-house for the wholesale trade.

There are five regular city hospitals and a smaller sick-house, which are open to the public; also three state hospitals and at least 10 other public hospitals, including the large Virchow city hospital. Besides there are three city asylums for the insane. The city also maintains a disinfecting establishment for furnishings, flats, etc. There are seven public bathing places for hot baths, and 16 with cold running water.

The city also runs a savings bank ("Sparkasse"). There is also a royal pawn-office, and a number of private benevolent institutions which are, in part, supported by the city.

The Central Employment office is of particular significance, and its management is unusual. In many German cities such an institution is managed directly by the city administration. A special office is fitted up for the purpose, notices of vacancies of one kind and another are received and those seeking employment are informed of such opportunities for work. Now, in Berlin, this general employment agency is not directly in the hands of the city, but receives support from the city. This support on the part of the city, which has been extended to $10,000, was given after a number of high city officials had identified themselves with the management of the agency in question, which was called the *Central-Verein*. This employment agency has a special building for its purposes, containing separate offices for different kinds of work; also youthful applicants are separated from the mature. A number of smaller employment agencies and unions of one kind and another have joined this general union. This condition for thus joining is that an executive committee be formed for each trade, consisting equally of workmen and employers, with a chairman belonging to neither party.

**Charities, etc.**— The city council spends annually about $80.00, aiding various private charitable associations; for instance, nine organizations for nursing the sick, 15 for the care of children, five for the care of women lying-in, and 43 other aid associations; also 23 educational institutions, besides a large number of foundations partly under the administration, partly under the inspection of the city.

The city has two asylums for the homeless, one for families, the other for such persons as only require a shelter for the night. A similar institution, as "Asyl," is maintained by a private association. In fact, it is characteristic of Berlin that public and private charity supplement each other. The care of the poor, as such, is in the hands of the city administration, and about 4,000 persons are employed in this work, though in honorary positions and without salary.

In addition to these means of providing for the poor must be mentioned the system of insurance for the working classes. The statute regulating insurance against sickness was passed in 1883, though previous to that time such insurance had already been made compulsory. The obligation is placed upon the employer, who pays the assessments and deducts the amount from the wages of the workman. At present there are 129 branches of this kind of insurance under the control of the city council, besides a few branches that are controlled by the state, and a number of private associations. The number of workingmen and women insured already exceeds 700,000, and in 1910 about $7,000,000 was paid out in sick insurance. According to the law, the weekly allowance during sickness is paid for as long as 26 consecutive weeks, but, under special circumstances, it may be paid for as long a period as 52 weeks. The city has built upon its own land homes for the convalescent, which are for the complete recovery of the sick. For the rest the city hospitals are open to the insured, but their expenses must be paid out of the insurance money.

There is in Berlin a state institution for the care of invalid workmen. In connection with the same there are several sanatoria which care for those who are about to become invalids. The sanatorium at Belitz may be mentioned. It is fitted up in magnificent style and is probably the best sanatorium on the continent of Europe.

**Educational Institutions.**— In the field of education the University of Berlin takes the first place. It was founded by Frederick William III in 1810. During the winter term of 1910 there were enrolled over 7,500 regular students, besides almost as many more so-called *Zuhörer*, i.e., mostly persons who have secured permission to attend lectures, but whose previous education is not sufficient to enable them to take up systematic studies leading to a degree. In connection with the university is the Seminary for Oriental Languages.

Further, of special significance is the "Technische Hochschule," which has nearly 3,000 students; also the "Bergakademie," and the Hochschulen for agriculture, for fine art, and for music.

All these are state institutions. To them has now been added a Hochschule for Commerce, which is being erected by the "Aeltesten der Berliner Kaufmannschaft." This is a society of merchants which was licensed by Frederick William III in 1820. Formerly they exercised the function of a board of trade. Since the

Chamber of Commerce was formed some years ago they have had to give up this function and have extended their activity into the field of commercial education.

As to Gymnasia and Realgymnasia, Berlin has five royal and 20 city institutions. There are besides, 13 city Realschulen, two royal and six city high schools for girls, four city finishing schools, a normal school, a royal seminary for male teachers, a similar one for female teachers and teachers of gymnastics, a royal theatre-school and school for deaf-mutes, a city school for deaf-mutes, and a city school for the blind. Instruction in these schools is free. It may be added that each of the suburbs has its own schools of various kinds.

**Museums and Collections.**— The more important picture galleries and collections are, the Old and the New Museums, the National Gallery, the Pergamon Museum and the Emperor Frederick Museum — all maintained by the state. Further, the Ravené Museum. Among historical collections may be mentioned the Royal Hohenzollern Museum, the Zeughaus, the Provincial Museum — a city institution, the Post Museum, and the royal museums for anthropology and German ethnology. The liberal arts are represented by the Royal Museum for Liberal Arts and by the exhibit of the Royal Porcelain Manufactory. Further, there are the royal museums for science, for agriculture, for mining and smelting, and for pathology. The Zoological Garden belongs to a private company, but it is in the nature of a public utility. The Aquarium is also owned by private parties, but is subventioned by the authorities. The state maintains a botanical garden. There are also the Hygienic Museum, the Colonial Museum and the Institute for Hydrography, which serve further the interests of science and the technic of shipbuilding. A curious recent creation is a permanent exhibition of contrivances for the betterment of the conditions of labor. There are three astronomical observatories, a state observatory and two private ones. The latter are always open to the public.

Many libraries, including the Royal Library of about a million volumes, provide opportunities for study in every field of knowledge.

**Monuments and Public Buildings.**— There are a large number of monuments on the streets and public squares of the city. A considerable number of them have been erected during the reign of the present Emperor, and, in fact, under his immediate influence.

The number of the palaces and public buildings is likewise very large, though, as compared with other German cities, Berlin is poor in specimens of old architecture.

There are numerous theatres, including the Royal Play House, the Royal Opera House, the New Royal Opera-Theatre, 13 other large theatres, and about a dozen smaller ones, a number of so-called "cabarets," and two permanent circuses.

**Churches.**— The oldest churches in Berlin are the Nikolai Church and Saint Mary's. Both were built in the 13th century but have been restored. Further, Saint Peter's may be mentioned. There are more than 40 evangelical churches, the most important being the Emperor William Memorial Church, built in 1891–95 in beautiful Romanic style (two large neighboring houses are in the same style of architecture); the Emperor Frederick Memorial Church, beautifully situated in the Thiergarten; and the New Cathedral (dedicated in 1905), built in Italian Renaissance style and ornamented with numerous sculptures. A French church was built in 1701–05; and there are also an English and an American church. Saint Hedwig's Church (Catholic) dates from the middle of the 18th century. Of the two larger synagogues the oldest and finest dates from the year 1866.

**Monumental Buildings.**— To be mentioned here especially are the Royal Palace, the palaces of Emperor William I, Emperor Frederick and Prince Albrecht, and the palace at Charlottenburg; further numerous state buildings, e.g., those occupied by the Departments of War and Education, the Foreign Office, the Imperial Health Office, the Imperial Insurance Office, the Patent Office, the Abgeordnetenhaus, and the large Reichstag building, in Italian Renaissance style; also various railway stations and palatial structures of the Postal Department. Of municipal buildings the city hall deserves mention; further, the city museum and numerous public schools; also the new city hall in Charlottenburg. The magnificent structures of the large banks, stores, breweries, insurance companies, etc., add much to the beauty of the city. The arcade between Frederick street and Unter-den-Linden may also be mentioned.

**Bridges, Statuary, Fountains.**— The following are the more notable of the monumental bridges in Berlin: Heydtbrücke, Potsdamerbrücke, Belle Alliancebrücke, Kurfürstenbrücke, Wilhelmbrücke, Friedrichbrücke, Schlossbrücke, Moltkebrücke and Oberbaumbrücke. Aside from the National Monument, the most noteworthy statues in the central part of the city are those of William I, Frederick the Great, the Great Elector, Frederick William III, Emperor Frederick, Empress Augusta, the two Humboldts, Helmholtz, Luther, Schiller, Waldeck and Schulze-Delitzsch. In front of the Reichstag building is an immense bronze statue of Bismarck. Near by are the statues of Moltke and Roon and the Column of Victory, which overlooks the 32 marble groups of Brandenburgian and Prussian statesmen and rulers in the Avenue of Victory. Other notable statues in the Thiergarten are those of Goethe, Lessing, Richard Wagner, Frederick William III and Queen Louise. Some of the numerous fountains worthy of note are the large fountain before the palace, which was designed by Begas and presented by the city on the accession of Emperor William II; the Hercules Fountain on Lützowplatz, which was designed by Lessing; and the artificial water-fall in Victoria Park.

**Trade, Transportation and Population.**— The land traffic of Greater Berlin in 1910 amounted to 12,697,965 tons (exclusive of transit trade), and the water-borne traffic to 8,848,900 tons. In that year the value of the exports to the United States and its possessions amounted to $17,172,413.

Twelve main lines of railway enter the city, and these are splendidly equipped. An important waterway for large ships from Berlin to Stettin on the Baltic, a distance of 62 miles, was opened on 2 May 1914. It is an extension and deepening of canals previously existing, and is

expected to develop enormously the several trades of the metropolis.

The character of the population of Berlin is subjected to a gradual change, which is caused partly by the building up of new industries, partly by the removal of well-to-do taxpayers to the suburbs. This migration of the wealthier classes is attended by an influx of the laboring classes, especially in the newly built parts of the city, so that the laboring population is constantly increasing. Again, the inner residential part of the city is coming to be used more and more for business purposes, so that here the population is decreasing continuously.

The development of facilities for transportation has contributed much to these changes. The "Stadtbahn," a railway which crosses the city from east to west, then encircles it both on the north and on the south, was and has been the cause of the wonderful growth of the western suburbs. Migration was encouraged by the exceedingly low fare of 10 pfennigs to the fifth station, or 20 pfennigs for the entire distance, *not* to mention the great reduction allowed on monthly tickets. This has led to the building of new stations along the outer parts of the "Stadtbahn" and to the institution of suburban trains, on which one may have a monthly ticket at a price varying with the distance.

In this connection must be mentioned also the "Grosse Berliner Strassenbahn." This is a private traction company which owns nearly all the street cars in the city. Since on most of the lines the fare is only 10 pfennigs this company has had great influence in the development of the suburbs. The fare is 5 and 10 pfennigs. The electric elevated and underground road passes along the southern periphery of the city from east to west. Important extensions of the subway system are now (1916) almost completed. During construction a section under the Spree was flooded on 27 March 1912, happily without loss of life.

Since 1911, when the lease of the operating company expired, the tramway lines within the city have been municipally owned. In 1912 the decision was taken to electrify the entire suburban system of Berlin. Electric locomotives are to be used in traction, the current for which is to be supplied by two 150,000 horsepower electric plants, one near Bitterfeld coal mines, 80 miles from Berlin, and the other in Berlin. The entire cost, including stations, cables, feeders and rolling stock, is estimated at $32,000,000. The system has been leased to a company for a period of 30 years. The whole enterprise was completed in 1917.

The bridging of the Havel Valley, completed in 1914, marks an important epoch in the development of Greater Berlin. This engine ring triumph, carried through in despite of bad soil conditions, has involved the building of a dam and two bridges — the Stateserge and the Havel — the latter, 79 feet wide and 537 feet long, with five spans.

Under the influence of improved facilities for transportation the composition of the population in the various parts of the greater city has become quite varied. The well-to-do live in the west and in the western suburbs, while the working classes have settled in the east and the north, and partly in the southeast. The large factories are situated in the east and in the northwest. While in Berlin 80 persons out of every thousand pay tax on an income of $750 and upward, the proportion of people in Rixdorf, a southeastern suburb, who have such an income is only 27 out of a thousand. On the other hand, in the wealthy western suburbs, Grünewald and Wilmersdorf, the proportion is 441 and 228, respectively, out of every thousand. Similar differences can also be noted in the interior of the city.

The city maintains a statistical bureau that keeps a careful record of all these conditions. Undoubtedly, such differences in the composition of the population will be found to account for the varying rate of mortality in the different parts of the city, as well as for the varying rate of taxation.

**Death Rate.**— To be sure, the mortality in Berlin is not only low, but is still decreasing. In 1873 the death rate was 28 per 1,000; in 1885 it had risen to 29.98; but by 1898 it had fallen to 18.16; in 1904 was 17; and in 1911, 15.59. Still, the rate is not uniform, varying from 8 in the wealthier parts of the city to 22 per thousand in the poorer quarters. The decrease of mortality is due to better hygienic conditions, especially to water-supply and sewerage. Though the death rate among children is still high the city authorities are doing everything possible to combat the evil. Building ordinances have been made stricter, and the hygienic conditions of flat-houses have been thereby greatly improved, especially in the newly built portions of the city. Within recent years there has been a decline in the birth rate which was 25.98 in 1906, and 21.64 in 1911.

**Tenements.**— Still the principal evil persists, i.e., the crowded condition of apartment-houses. On an average such a house in Berlin shelters 77 persons, and the flat of a workman, which usually consists of only two rooms, closet, etc., must not only shelter the family, but provide sleeping quarters for one or two outsiders. The explanation of this is to be found in the relatively high rents for such flats, the minimum being $5 per month, or about one-fourth of a laborer's income. The desire to cut down the rent by letting sleeping quarters is amply met by the large number of workmen moving into Berlin.

The building of model tenements for the betterment of living conditions among the poor has not taken place to any considerable extent. Aside from a co-operative company that built 269 small homes for workingmen in the suburbs, which were sold to the members of the company, there are seven building companies of philanthropic nature, but their houses offer accommodations for less than 10,000 persons. Besides, the administrations of some of the state industries have placed homes at the disposal of their workmen, and both the city and the state aid such benevolent enterprises by furnishing capital at a low rate of interest.

Aside from the evils of high rents, and, consequently, overcrowded flats, the conditions are not bad. The plumbing in the newer flat-houses leaves nothing to be desired. In fact, both in Berlin and the suburbs, the better class of such houses have all modern conveniences, and are comparatively luxurious.

**Streets.**— The streets of Berlin are well cared for and are in excellent condition. Al-

ready 40 per cent of the streets are paved with wood or asphalt, the rest being paved with stone or cement. But the work of improvement continues. The yearly pay-roll for street cleaning amounts to $531,000. Much more is spent now on parks than formerly. Within the city limits there are seven state and five city parks. For the most part the city is illuminated by gas, but, since recently, in part by electricity. The city maintains an efficient fire department, which also acts as a good Samaritan in all cases of distress, whether from fire or otherwise. In accordance with an ordinance of more than a hundred years standing, all buildings must be insured in the city "Feuerkasse." The average insurance valuation per house is $41,500.

Naturally, the great demand for real estate and the more luxurious style of architecture have increased valuations considerably. On an average property is worth about $65 per square metre.

**Climate.**— The mean temperature is 9° Centigrade, the thermometer varying from about 0.7° below zero in the middle of January to 19° above zero in the middle of July. During the months of December, January and February the mean temperature varies from 0.7° below zero to 0.8° above zero. The mean temperature for other months is as follows: March, 3.5°; April, 8.5°; May, 13.3°; June, 17.4°; July, 18.9°; August, 18.1°; September, 14.6°; October, 9.5°; November, 3.8°. The mean barometer is 76.2, the lowest, 56.9 centimetres. West winds prevail.

While, in general, healthful, the climate has been found to be unfavorable to young children in the summer. Stomach troubles are aggravated by the heat, and the death rate among infants is thereby considerably increased. The city has been free of epidemics for years.

**Recent Development.**— Since about 1865 the capital city of the empire has had, in many respects, a brilliant development. In this short period the population has trebled, hygienic conditions have been wonderfully improved, and the city has become one of the most beautiful, and one of the most visited, cities in the world. More than a million strangers register in the hotels annually, not including the large number of visitors who find their temporary quarters in those parts of the greater city which are under separate municipal control. Indeed, for the stranger, who cannot see the imaginary boundary lines, it is all Berlin. Socially and industrially it is really only one city, and the entire complex of separate municipal corporations might be fittingly called Greater Berlin.

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**BERLIN**, N. H., city in Coos County on the Androscoggin River and on the Grand Trunk and the Boston and Maine railroads, 98 miles northwest of Portland, Me. The surrounding mountains, including Mount Washington, add much to the scenery, and the river supplies a water power equivalent to nearly 20,000 horse power. The chief manufactures are sulphite pulp and paper, in connection with the large lumbering industry. The United States census of manufactures of 1914 recorded 19 industrial establishments of factory grade employing 2,886 persons, of whom 2,680 were wage earners, receiving annually $1,974,000 in wages. The capital invested aggregated $20,860,000, and the year's output was valued at $13,090,000: of this, $4,245,000 was the value added by manufacture. The city has a public library, a hospital, two theatres, parochial and public schools and a fine municipal building. Pop. (1910) 11,780; (1914) 13,013.

**BERLIN**, Wis., city in Green Lake County, 97 miles northwest of Milwaukee, on the Chicago, Milwaukee and Saint Paul Railroad, and on the Fox River. There are granite quarries in the vicinity, and the dairying and cranberry growing industries are of considerable importance. It manufactures apiary supplies, bricks, dairy supplies, brooms, gloves, fur coats, mittens, shoes and washboards. It was settled in 1847 and was incorporated in 1856. The government is vested in a mayor, chosen for two years, and a council. Pop. 4,636.

**BERLIN, Treaty of.** See BERLIN CONGRESS.

**BERLIN, University of,** a celebrated institution of learning in Berlin, Germany. It is, with the exception of Bonn, the youngest of the German universities, but is probably the most famous of them all. It was founded in 1810, when the Napoleonic victories had left Prussia apparently crushed, and had even transferred her great University of Halle to the newly-formed kingdom of Westphalia. Wilhelm von Humboldt was Minister of Education at the time, and Prussia's debt to him for organizing her national school system, with the University of Berlin at its head, during that period of national defeat and disaster, is certainly very great. It should be borne in mind, too, that Humboldt was ably seconded by Fichte and Schleiermacher. The first rector of the university was Schmalz; the first deans of its faculties were Schleiermacher, Biener, Hufeland and Fichte; and before it was 10 years old it had for professors such men as Niebuhr, Wolff, Böckh, Bekker and Hegel. In more recent years, Ranke, Mommsen, Helmholtz, Grimm brothers, Lepsius, Ritter, Gneist, Savigny, Virchow, and other famous scholars have upheld the reputation which the university won for itself at the very start. There are four faculties, theology, medicine, jurisprudence and philosophy, with a total of 377 professors and teachers. It had in 1912 more than 14,000 students, of whom over 8,000 were matriculated. The university also includes several "institutions," comprising the seminars, the institutes of physics, clinics, museums and observatories. The university is supported by the state and is under control of the Minister of Education. The administration is in the hands of the rector and senate, the so-called "plenum," or full body of professors, and the faculties. It has police and judicial powers over its members, exercised by the administration and a university court. Men and women of all nationalities are admitted. The choice of professors for distinguished excellence is still maintained. The library consists of over 200,000 volumes and more than that number of university and school "theses," etc. The chief library facilities for students are to be found, however, in the Royal Library (1,260,000 volumes), in the Reichstag Library (153,000 volumes), the Royal War Academy library (94,000 volumes), and the Royal Prussian and Royal Secret Archives; other collections are also accessible.

From 1906–14 the University of Berlin was exchanging professors with Columbia and Harvard universities, a system by which it maintained permanent chairs at these universities in return for an American professorship at home. The arrangement was in the hands of the Prussian government. The 'Akademische Auskunftsstelle' was recently established as a bureau of information, particularly for foreign students.

**BERLIN CONGRESS,** a gathering at Berlin, Germany, where the European powers undertook the settlement of the questions growing out of the Russo-Turkish War of 1877–78. The Congress met 13 June 1878; and completed its labors with the signing of a treaty on 13 July following. The Treaty of San Stefano (3 March 1878) between Russia and Turkey did not suit the other powers; and the Congress, convened at the suggestion of Germany, so modified the agreement between Russia and Turkey that the former lost nearly all the fruits of victory. By the new arrangement Bulgaria was divided into two parts, Bulgaria proper and eastern Rumelia. Parts of Armenia were given to Russia and Persia; the independence of Roumania, Serbia and Montenegro was guaranteed; Bosnia and Herzegovina was transferred as protectorates of Austria; and Bessarabia restored to Russia. Greece was also to have an accession of territory. By a separate arrangement previously made between Great Britain and Turkey, the former got Cyprus to administer. Bismarck was the president of the Congress. The more important members were Prince Gortchakoff, Count Andrassy, Lord Beaconsfield, Lord Salisbury, Lord Russell, M. Waddington, Count Corti, Karathéodori Pasha, Prince Hohenlohe and General von Bülow. On 9 April 1909 Great Britain and Germany recognized the annexation of Bosnia and Herzegovina by Austria and signed their consent to the abrogation of Article 25 of the Treaty of Berlin. France and Russia took the same action on the following day. Consult Hertslet, 'The Map of Europe by Treaty' (Vols. III and IV, London 1891); Holland, 'The European Concert in the Eastern Questions' (Oxford 1885); id., 'Studies in International Law' (Oxford 1885).

**BERLIN DECREE,** a decree issued by Napoleon, 21 Nov. 1806, which declared the British Islands in a state of blockade. It forbade commerce with them and trade in their merchandise, and declared all merchandise belonging to Englishmen, or transported from England, lawful prize. Its effect was to inflict great injury on the American carrying trade. See CONTINENTAL SYSTEM.

**BERLIN MEMORANDUM,** a remonstrance addressed to the Turkish government in May 1876 by the principal European Powers, insisting on a two months' armistice between the Sultan and his European subjects who were in rebellion, in order that terms of peace might be negotiated. See ANDRASSY NOTE.

**BERLINER, Emile,** bär-lē'nėr, ā'mēl, American inventor: b. Hanover, Germany, 20 May 1851. After graduating at Wolfenbüttel in 1865, he came to America five years later, and in 1878 was appointed chief inspector of instruments by the Bell Telephone Company. He invented the loose contact telephone transmitter or microphone, known by his name, and the device called the gramophone. He has devoted his energies to perfecting the telephone, and has secured many patents for his inventions. He planned and was a member of the Washington milk conference of 1907. He has been engaged since 1901 in an educational campaign against the dangers of raw milk and other dairy products. He was the first to have made and used in aeronautical experiments the light weight revolving cylinder internal combustion motor, now extensively used on aeroplanes (1908). He is the author of a number of pamphlets dealing with the prevention of sickness and has published 'Conclusions,' a work dealing with philosophical and religious questions.

**BERLIOZ, Louis Hector,** French composer: b. Côte Saint André, 11 Dec. 1803; d. Paris, 8 March 1869. His father, a physician, desired his son to follow the same career but the latter early in life was greatly attracted to music, and soon found his way to the Paris Conservatory library, where he studied the masters. He studied harmony under Lesueur and composed a mass which was performed at Saint Roch. In 1823 he was admitted to the Conservatory and at once his great talent became evident, and at the same time his disregard for the traditional canons. Bent on giving expression to his own ideas, Berlioz proceeded by violating all precedents and established rules. As a consequence he was never complete master of the various forms of composition. With his 'Fantastic Symphony,' and the cantata, 'Sardanapalus' he established a new school of composition which came to be known as the school of program music. Composers of the school seek to express by means of music definite ideas and moods and even to relate definite events. Berlioz had won the Prix de Rome with 'Sardanapalus' in 1830 and his residence in Italy furnished him with inspiration for his gifts. He wrote the overture to 'King Lear' and 'Lélio,' a symphonic poem. He took up journalistic work successively for the *Correspondant,* the *Courrier de l'Europe,* the *Revue Européenne* and the *Gazette Musicale de Paris.* His style was marked by its brilliancy and power and by unswerving honesty and candor. In 1839 he was made conservator; and in 1852 librarian at the Conservatory. The symphony, 'Harold en Italie' (1834), the 'Messe des morts' (1837) and 'Romeo et Juliette' (1839) won him high praise from the critics, but his opera, 'Benvenuto Cellini' (1838), was a dismal failure. In 1843 Berlioz made a tour of Germany and for the next 10 years he toured Austria, England, Russia and other countries of Europe, and met with success everywhere. In 1856 he was elected to the Academy. 'Les Troyers' (1863) proved a failure, which greatly disheartened the composer. His writings on music and musical topics are among the best of their kind. His 'Traité d'instrumentation' expressed his views on instrumentation and long remained the first work in its field. In his lifetime Berlioz did not receive his due measure of appreciation. It is true he lacked melodic invention but he was master in all else. His place in the history of music is most important. He exerted a wide influence on the advance in orchestral technique and he is the acknowledged father of modern orchestration.

There is a German translation of his collected writings by Richard Pohl (4 vols., 1804). A complete edition of his compositions and writings in 17 volumes is in preparation at Leipzig under the editorship of Breitkopf, Malherbe, Härtel and Weingartner. Consult Ambros, 'Bunte Blätter'; Hippean, 'Berlioz, l'homme et l'artiste' (Paris 1888); Julbien, A., 'H. Berlioz' (Paris 1888); Pohl, R., 'H. Berlioz, Studien und Erinnerungen' (Leipzig 1884); id., 'H. Berlioz, Leben und Werke' (ib. 1900); the autobiographic 'Memoirs' (Paris 1870; English trans., R. & E. Holmes, London 1884); Prud'homme, J. G., 'Hector Berlioz, 1803–1869' (Paris 1905).

**BERM**, or **BERME.** *In fortification*, a narrow, level space at the foot of the exterior slope of a parapet, to keep the crumbling materials of the parapet from falling into the ditch. It is from four to eight feet in width and is about level with the natural ground surface.

*In engineering*, a ledge or bench on the side or at the foot of a bank, parapet or cutting, to catch earth that may roll down the slope, or to strengthen the bank.

**BERMEJO**, bėr-mā'hō, a South American river rising in Tarija, Bolivia, and flowing across Argentina to the Paraguay River, which it enters about 140 miles south of Ascension. It is navigable for about half of its length of 1,300 miles. It is of great importance as a waterway from Paraguay to the Andine region. There is a steamer service in operation on the river. It was first thoroughly explored by Cornejo in 1790.

**BERMONDSEY**, a metropolitan borough in the southeast of London, England, bounded on the west by Southwark. Area, 1,500 acres. It is a congested district of mean streets, and is the centre of the leather trade. The riverside wharves give employment to numbers of the laboring population. Pop. (1911) 125,903. Consult local histories by Bell (1880), Clarke (1901), Phillips (1841), and Besant's 'South London' (1899).

**BERMUDA**, bėr-mū'dą, or **SOMERS ISLANDS**, a cluster of small islands in the Atlantic Ocean, belonging to Great Britain, and situated 580 miles southeast of Cape Hatteras and 677 miles from New York. They number 360, but 20 are for the most part so small and so barren that they have neither inhabitants nor name. They were first discovered by Juan Bermudez, a Spaniard, in 1522; in 1609 Sir George Somers, an Englishman, was wrecked here, and after his shipwreck, formed the first settlement. The most considerable of these islands are Saint George, Bermuda or Long Island (with the chief town, Hamilton, population 2,630, forming the seat of the governor), Somerset, Saint David's and Ireland. They are chiefly used as a naval and military station, the strategic importance of which has increased since the construction of the Panama Canal and has led to improvements in the spacious harbor of Saint George. The island of Ireland is occupied by a government dockyard and other naval establishments, while Boaz and Watford islands have the military depots. The military headquarters are at Prospect. The climate is generally healthful and delightful, the air being mild and moist at all seasons. It is not adapted, however, for consumptive patients. The thermometer seldom falls below 40° F., and rarely rises above 85°. These islands with their scenic attractions have become a popular holiday resort for Americans, and plentiful hotel accommodation is supplied at Saint George's and Hamilton. The surface is rather irregular; the soil, though light and stony, is in general rich and fertile. The islands form a nearly continuous chain and are connected almost uninterruptedly by roads, bridges and causeways. The water is in general salt; there is but little fresh except rain-water, preserved in cisterns. The inhabitants export early potatoes, onions, lily bulbs, etc., nearly all of these products being shipped to New York. The value of the exports ranges from $585,000 to $635,000 annually; that of the imports from about $2,851,000 to $3,185,000. The revenue is about $405,000. Pop. about 20,000. Consult Bell, E. Y., 'Beautiful Bermuda' (New York 1902).

**BERMUDA GRASS** (*Capriola dactylon*), a perennial grass cultivated in the West Indies and the United States, where it is of special value on the sandy soils of the Southern States. It is a valuable fodder grass for warm climates. It will grow in any soil not too damp, but in America it matures only in the extreme south. It is probably a native of India, but has no spread throughout the warmer portions of the globe. It is a low, creeping plant, rooting at the joints and has short flower stalks. It makes a dense sod. It turns brown under frost. Because of its rooting qualities it is dislodged with difficulty once it is well established. It is propagated from root stocks as well as from its seed.

**BERMUDA HUNDRED**, Va., a peninsula in Chesterfield County, formed by the junction of the Appomattox and James rivers, occupied by Gen. B. F. Butler, who, in 1864, commanded the Army of the James, numbering about 25,000 Federals, where he might intrench himself and await Grant's arrival. In the vicinity of this position there was constant fighting between Butler's troops and those of the Confederates under General Beauregard whose forces were 20,000 strong. The fighting continued from 16 May to 30 May. On the 16th Heckman's brigade was destroyed by the Confederates, who were then pushing on to Bermuda Hundred, when Ames and Gillmore came up and Beauregard's plans miscarried. On the 19th the Confederates assaulted the Federal rifle pits under Ames and Terry, but without success. Skirmishing continued until the 30th, when the Confederates desisted. Bermuda Hundred was a valuable position, since it was very near both Richmond and Petersburg; but Butler was charged with military incapacity in having "corked himself up in a bottle." The population of the district was 2,554 in 1910. Consult Johnson and Buel, 'Battles and Leaders of the Civil War' (Vol. IV, New York 1887).

**BERMUDEZ, Remigio Morales**, bār-moo'dāth, rā-mē'jē-ō mō-rā'lĕz, Peruvian statesman: b. Tarapaca province, 30 Sept. 1836; d. Lima, 31 March 1894. He began business in the nitrate trade in his native province. In 1854, as a lieutenant, he joined the revolutionary army which finally overthrew General

Echinique's government. In 1864 he joined the revolution against President Castilla. In the war with Chile he led the force that marched to Arica. When Caceres was elected President in 1886, Bermudez was chosen Vice-President and was elected President in 1890.

**BERN**, bărn, or bėrn, Switzerland, the chief canton of the confederacy, situated in the western half and surrounded by the cantons of Neuchâtel, Freiburg, Vaud, Valais, Uri, Unterwalden, Lucerne and Solothurn, being partly bounded also by France and Alsace; area 2,657 square miles. The more northern portion of the canton has beautiful plains and valleys and a fertile and highly cultivated soil, producing corn, wine and fruits; the Emmenthal, one of the richest and most fertile valleys in Switzerland, raises the finest cattle and produces a celebrated cheese. The southern portion of the canton, the Bernese Oberland, begins at the foot of the high mountain chain between this canton and that of the Valais and extends to its summit. The lower valleys produce good fruits and are fertile and agreeable: higher up are excellent Alpine pastures; then succeed bare rocks, extensive glaciers (the source of magnificent streams and waterfalls) and some of the highest mountains of Switzerland, as the Finsteraarhorn, the Schreckhorn and Wetterhorn, the Eiger, the Jungfrau. The chief trade of the canton is in linen and woolen manufactures and cattle-raising. Pop. about 550,000.

**BERN**, Switzerland, the capital of the canton of the same name (see above) and of the whole confederation since 1848, situated on an elevated rocky peninsula, washed on three sides by the Aar, which is crossed by several bridges, including the handsome Nydeck Bridge, the huge iron Kirchenfeld Bridge and the Kornhaus Bridge (opened in 1898), with a roadway 160 feet above the Aar and a principal arch of 380 feet span. The streets are, for the greater part, straight, wide and well paved; and the houses, partly provided with piazzas, are substantially built of stone. The streets are purified by rills of water and adorned with fountains. The city gets water for its drinking supply and for the motive power of its electric plants by means of a dam 1,000 feet long across the Aar. Among the public buildings are the great Gothic cathedral 1421–1573; the Church of the Holy Spirit; the University; the hall of the Swiss Federal Council; the art museum, containing the municipal picture gallery; a hospital; the town-house, a Gothic edifice of the 15th century, restored 1868; the mint, corn hall, historical and archæological museum; the natural history museum; observatory; deaf-and-dumb institution; infirmary; orphan and lunatic asylums. The public library possesses great treasures of printed books and manuscripts. Trade and commerce are lively; the manufactures consist of woolens, cottons, silks, machinery, chocolate, scientific instruments, etc. It has two great annual fairs and a large cattle and horse market. There are street railroads with compressed air and electricity as motive power. Steam roads run to the suburbs. At Bern is located the central office of the International Postal Union. The city was founded in 1191 and in 1218 the German Emperor Frederick II declared it a free city of the empire and confirmed its privileges by a charter, which is still preserved. In 1353 it entered into the Helvetic Confederacy. The government of the town from early times was democratic but in the 16th century a tendency toward aristocratic domination set in. The invasion by the French in 1798 overthrew the aristocratic régime. The struggle between Liberals and Conservatives during the 19th century resulted in victory for the Liberals. The Constitution was repeatedly revised in a democratic sense and after 1870 the referendum was developed with great completeness. In 1405 the greater part of the city was destroyed by fire, but it was afterward regularly rebuilt. The bear, as the heraldic emblem of Bern, figures frequently in a sculptured form; and a number of these animals in the flesh are kept at the cost of the municipality. There is a curious clock-tower containing mechanism by which the striking of the hours is heralded by the crowing of a cock and a procession of bears. Pop. (1910) 85,264.

**BERN, University of**, a state educational institution having its origin in a minor school which in the early part of the 16th century was much enlarged by the demand for accommodations for theological students. About 200 years later it expanded by the institution of departments of law, science and medicine. The Napoleonic period seriously affected the university, as it did others near to the French frontier, but in 1834 it was formally reorganized as a state university. It has an income of about 900,000 francs and an endowment of 1,000,000 francs. Its 1,800 students include over 300 women and are divided among the faculties of evangelical theology, Catholic theology, philosophy, law, medicine and veterinary medicine. The library was incorporated in 1905 with the city library at Bern and numbers over 200,000 volumes.

**BERNADOTTE, Jean Baptiste Jules**, bär-nä-dŏt', zhŏn bäptēst zhool, king of Sweden and Norway. b. Pau, 26 Jan. 1763; d. 8 March 1844. He was the son of an advocate of Pau and enlisted in a French regiment of marines at the age of 17. He was made a subaltern in 1790 and thereafter his promotion was rapid. In 1794 he was appointed general of division and distinguished himself greatly in the campaign in Germany and on the Rhine. After the battle of Neuwied he was introduced for the first time to Bonaparte, who conceived the highest opinion of his abilities, though a constant suspicion of Napoleon seems always to have been present in the mind of Bernadotte. In 1798 he married Mademoiselle Clary, sister-in-law of Joseph Bonaparte. The following year he became Minister of War, but was shortly obliged to resign. On the establishment of the empire Bernadotte was created Marshal of France and (after Austerlitz) Prince of Ponte-Corvo. At the head of an army of observation stationed in the north of Germany, he fixed his headquarters at Hamburg. At the battle of Wagram (1809) he led the Saxon contingent. At this time Gustavus IV had been driven from the throne of Sweden. The Duke of Sudermania assumed the crown under the name of Charles XIII; and as he was far advanced in years the Diet had nominated, as his successor, the Prince of Holstein-Augustenburg, when the latter died in a mysterious manner. The heir-apparency to the

Swedish crown was then offered to the Prince of Ponte-Corvo. This offer was accepted by Bernadotte with the consent of the Emperor; and in October 1810 he arrived in Sweden, where, having previously abjured the Roman Catholic religion, he was proclaimed heir-apparent to the throne under the title of Prince Charles John. He had not long been established in this dignity before serious disagreements took place between him and Bonaparte, whose blockade of the Continental ports was very detrimental to the commercial interests of Sweden. The result was a complete rupture and the accession of Sweden in 1812 to the coalition of sovereigns formed against Napoleon. At the battle of Leipzig Prince Charles John contributed effectually to the victory of the Allies. The acquisition of Norway was one of his chief aims; it was provisionally ceded from Denmark under the Treaty of Kiel (1814), but a military campaign was required to make it effective. On the general re-establishment of the European dynasties at the termination of Napoleonic war, Bernadotte retained his position as crown prince and became king of Sweden in 1818, under the title of Charles XIV. During his reign agriculture and commerce made great advances, many important public works were completed, and the King, though he could not speak their language, was popular with his subjects. Consult Meredith, 'Memoirs of Charles John, King of Sweden and Norway' (London 1829)

**BERNARD**, bėr'nard, bėr-närd', or (Fr.) bār-nār, **Saint, of Clairvaux**, French ecclesiastic: b. Fontaines, Burgundy, 1091; d. 1153. In 1113 he became a monk at Citeaux; in 1115 1st abbot of Clairvaux, near Langres. An austere manner of living, solitary studies, an inspiring eloquence, boldness of language and the reputation of a prophet, rendered him an oracle to all Christian Europe. In 1128 he drew up the rules for the new order of Knights Templars and was instrumental in securing its recognition. He was the founder of 70 monasteries. Such was the spell of his oratory that it is said mothers hid their sons, wives their husbands, companions their friends, that they might escape the contagion of his spiritual enthusiasm. He promoted the Crusade of 1146, with almost fatal success, as of the many thousands who gave up home and kindred to join that adventure, few returned. Its failure, in the face of his glowing prophecies, was a cruel disappointment to him. He succeeded, however, in quieting the fermentation caused about that time by a party of monks against the Jews in Germany. He declined all promotion and in the rank of abbot of his "beloved Jerusalem" (as he used to call Clairvaux), he continued with all humility, but with great boldness, his censures of the laxity of the clergy and his counsels to the Popes. Innocent II owed to him the possession of the right of investiture in Germany and Eugenius III his education. He was, at the same time, the umpire of princes and bishops and his voice in the synods was regarded as divine. By his rigid orthodoxy and his remarkable eloquence, which was always directed to the promotion of practical Christianity, he did much to confirm the power and influence of the Church in the Middle Ages. His sermons were preached in Latin, he was honored with the title of the "Mellifluous Doctor," and he is esteemed by the Catholic Church as the last of the Fathers. He was a strong opponent of Abelard and Gilbert of Porée in their philosophical teachings. He is the author of two well-known hymns, "Jesus, the Very Thought of Thee," and "O Sacred Head, Now Wounded." He was canonized by Alexander III in 1174. The monks of the reformed order of Cistercians, which he founded, are named in his honor. The best edition of his works is that of Mabillon (Paris 1690, 2 vols.; reprinted Paris 1839–40). Consult the works bearing his name by Eales, S. J. (1890); Morrison, J. C. (1863); Ratisbonne (1841; English trans., 1878); Sparrow-Simpson (1895); Storrs (1893); and Vacandard (1895).

**BERNARD, Saint, of Mentone** (Menthon): b. Mentone, Savoy, 923; d. Novara, May 1007. Very little is known of his life except that he was at one time archdeacon of the city of Aosta and that he later entered upon a monastic life and founded the hospices on the Great and Little Mount Saint Bernard, about 962 A.D. For his biography consult L. Burgener (2d ed., Lucerne 1870).

**BERNARD, Alexis Xyste**, Canadian clergyman: b. at Beloeil, 29 Dec. 1847. He was educated at Montreal College, Grand Seminary of Montreal and the College of Sorel, ordained to the priesthood in 1871 and consecrated bishop of Saint Hyacinthe 15 Feb. 1906.

**BERNARD**, bā-nār', **Charles de**, properly **Bernard du Grail de la Villette**, French novelist: b. Besançon, 25 Feb. 1804; d. Neuilly, 6 March 1850. He entered upon the study of the law, but soon gave it up to engage in journalism. He was a disciple of Balzac, whom he resembles in his power of realistic description and psychological analysis; but he possesses a purer and more nervous style and above all is content with a less minute elaboration of story and characters. His first piece, 'The Gerfalcon,' made a hit with its clever description of the literary cliques. Everywhere he evinces clear insight into the foibles of society. Of his novels, the following may be named as only second in rank to his masterpiece, 'The Gerfalcon', 'A Magistrate's Adventure'; 'The Gordian Knot'; 'Wings of Icarus'; 'The Lion's Skin'; 'The Country Gentleman.' He collaborated with C. H. L. Laurençot in producing two comedies. His 'Œuvres complètes' were published in 12 volumes after his death. For appreciative criticisms consult James, Henry, 'French Poets and Novelists' (1878) and Thackeray, W. M., 'Paris Sketch-Book.'

**BERNARD, Claude**, French physiologist: b. Saint Julien, Rhône, 12 July 1813; d. Paris, 10 Feb. 1878. His parents were small rural proprietors. The parish curé taught Bernard at first, and he continued his studies at the college of Villefranche and at Lyons. He was destined at first for the profession of pharmacist, which he soon abandoned for literature. St. Marc Girardin, to whom he submitted one of his works, dissuaded him from following a literary career and Bernard turned to medicine. He paid particular attention to anatomy, dissection and operation. In 1839 he became interne and in this capacity became associated

with Magendie at the Hôtel Dieu. Under the direction of the latter he was soon attracted to the study of physiology and took Magendie's course at the Collège de France in 1841. In 1843 Bernard published his first work on anatomy and physiology, the same year his thesis on gastric juice secured to him his doctorate. Within a few years his discoveries placed him in the first rank among the physiologists of France and of Europe. In 1847 he assisted Magendie at the Collège de France and succeeded to the latter's chair of medicine in 1855. In 1854 he entered the Academy of Sciences and entered on his duties in the newly-founded chair of experimental physiology at the Sorbonne. In 1868 he was succeeded at the Sorbonne by Paul Bert and became professor of general physiology at the Museum of Natural History. He was elected to Flouren's place in the French Academy in 1868, and became senator of the empire in 1869. Bernard exercised a great influence on the science of physiology through his works and his important discoveries, also by his lectures at the museum, and by his activity as president of the Société de Biologie. In his later years he was a world-wide figure and his prestige, gained through his discoveries, was sustained by his personal character. His death caused universal regret. The Chamber of Deputies, on the motion of Gambetta, voted him a public funeral, the first scientist so honored. A monument by Guillaume was erected to his memory on the grounds of the Collège de France. It is difficult to point out in detail all his original discoveries; they cover the entire field of physiology and time has left them almost intact. His works include 'Leçons de physiologie expérimentale appliquée à la médicine' (2 vols., 1854–55); 'Leçons sur les effets des substances toxiques et médicamenteuses' (1857); 'Leçons sur la physiologie et la pathologie du système nerveux' (1858); 'Leçons sur les propriétés physiologiques et les alterations pathologiques des liquides de l'organisme' (1859); 'Leçons sur la chaleur animale' (1876); 'Leçons sur la diabète et la glycogénèse animale' (1877); 'Leçons sur les propriétés des tissus vivants' (1866); 'Physiologie générale' (1872); 'Leçons de physiologie opératoire' (1879); 'La science expérimentale' (1878), and 'Introduction à la médicine expérimentale' (1876). Consult Malloizel, G., 'Bibliographie de travaux scientifiques' (1881) and the notices by Chauveau, Dartre and Paul Bert in the 'Proceedings' of the Société de Biologie for 1886.

**BERNARD**, bĕr'nard, Sir **Francis**, English administrator: b. Nettleham, England, 1714; d. Aylesbury, England, 16 June 1779. Graduated at Oxford in 1736, he became a distinguished member of the bar, and was made governor of New Jersey 1758–60, and of Massachusetts Bay 1760–69. At first he enjoyed the good will of the people; but when the division into two parties came he favored the Crown and did a great deal toward precipitating the Revolution by his aggressive attempts to strengthen the royal authority. He was finally recalled on account of the unpopularity resultant on his bringing troops into Boston. His departure was the occasion of general rejoicing. He manifested a special interest in Harvard College, and when its library was destroyed in 1764 he obtained funds for its reconstruction. He published 'Letters to the Ministry' (1769); 'Select Letters on the Trade and Government of America' (1774). In 1848 his 'Letter Books' were purchased by Dr. Jared Sparks, who bequeathed them to the library of Harvard University.

**BERNARD, Jacques,** French Protestant clergyman and author: b. Nions, in Dauphiné, 1 Sept. 1658; d. The Hague, 27 April 1718. When the Edict of Nantes was revoked, Bernard went to Holland, and while there founded a school of philosophy and *belles-lettres* at The Hague. He was for a time assistant professor at Leyden. He became editor of the *Bibliothèque Universelle,* and later editor of the *République des Lettres.* He wrote and published 'Recueil de traites de paix, de trêves, de neutralitè . . . et d'autres actes publics faits en Europe' (1700); 'Actes et mémoires des négociations de la paix de Ryswick' (1725), etc.

**BERNARD, Montague,** English lawyer: b. Gloucestershire, 28 Jan. 1820; d. Overross, 2 Sept. 1882. He was educated at Trinity College, and was professor of international law at Oxford 1859–74. In 1871 he was one of the high commissioners who signed the Treaty of Washington, and on his return home was made a privy councillor. In 1872 he assisted Sir Roundell Palmer in preparing the British case for the Geneva Arbitration Tribunal. He resigned his professorship at Oxford in 1874 because of the multiplicity of his public employments, but he also took an active interest in the university. He published 'Four Lectures on Subjects Connected with Diplomacy' (1868), and 'Historical Account of the Neutrality of Great Britain during the American Civil War' (1870).

**BERNARD, Pierre Joseph,** bār-nār, pē-ār zhō-sĕf, or **GENTIL** (zhŏn-tēl) **BERNARD,** French poet: b. Grenoble, 26 Aug. 1708; d. Choisy-le-Roi, 1 Nov. 1775. At an early age he showed a great taste for poesy, and was at first an attorney's clerk, but afterward became secretary to Marshal de Coigny, who had command of the army of Italy in 1733–34. After the marshal's death he obtained a lucrative appointment, through the protection of Madame Pompadour, and was then able to indulge his poetic faculties. Few writers were more popular in their own day than Bernard. He wrote an opera, 'Castor and Pollux,' which met with great success; the 'Art of Loving,' and a number of odes, songs, etc. His works were collected and reprinted by F. Drujon (1883). Consult 'Correspondance littéraire, philosophique et critique' (16 vols., Paris 1877–82), and Voltaire, 'Correspondance générale.'

**BERNARD, Simon,** bār-nār, sē-mŏn, French engineer: b. Dole, 28 April 1779; d. 5 Nov. 1839. He served as aide-de-camp to Napoleon; was wounded in the retreat after the battle of Leipzig; superintended the defense of Torgau, and was present at Waterloo. In 1816 he came to the United States; was commissioned brigadier-general of engineers, and planned an elaborate system of seacoast defenses, the most important of the works built by him being Fort Monroe. He was also associated with the building of the Chesapeake and

Ohio canals and the Delaware breakwater. In 1831 he returned to France, where he designed the fortifications of Paris. In 1834 he was appointed inspector-general of engineers, and from 1836–39 was Minister of War.

**BERNARD**, bėr-nȧrd, **William Bayle**, Anglo-American dramatist: b. Boston, Mass., 27 Nov. 1807; d. 5 Aug. 1875. His first work was a nautical drama called 'The Pilot.' This proved successful and encouraged him to pursue a literary career. He wrote in all 114 plays, of which the best known are 'Rip Van Winkle'; 'The Man About Town'; 'Marie Ducange,' and 'The Boarding School.'

**BERNARD**, bėr'nȧrd, **Great Saint**, a celebrated pass of the Pennine Alps, Switzerland, in the canton Valais, on the mountain-road leading from Montigny to Aosta in Piedmont. On the east side of the pass is Mount Velan, and on the west side the Point de Dronaz; there is no mountain known by the name of Saint Bernard. Almost on the very crest of the pass is the famous hospice, among the highest permanently inhabited spots of Europe, 8,700 feet above the level of the sea. There is a massive stone building capable of accommodating 70 or 80 travelers with beds and of sheltering 300. As many as 500 or 600 have received assistance in one day. It is situated on the highest point of the pass, exposed to tremendous storms from the northeast and southwest, and is tenanted by a prior and 15 brethren of the order of Saint Augustine, who have devoted themselves by vow to the aid of travelers crossing the mountains. The climate of this high region is extremely rigorous. There is a lake on the summit, at a short distance from the hospice, on which ice has frequently remained throughout the whole year. From the difficulty of respiration in so elevated a locality, and the severity of the climate, few of the monks survive the time of their vow, 15 years from the age of 18, when they are devoted to this service. The famous breed of dogs kept at Saint Bernard to assist the brethren in their humane labors have died out, and their place is now taken by Newfoundland dogs. In the midst of tempests and snowstorms the monks, accompanied by some of the dogs, set out for the purpose of tracking those who have lost their way. If they find the body of a traveler who has perished they carry it into the vault of the dead, where it is wrapped in linen and remains lying on a table till another victim occupies the place. It is then set up against the wall among other dead bodies, which, on account of the cold, decay so slowly that they are often recognized by their friends after the lapse of years. Adjoining this vault is a kind of burying-ground, where the bones are deposited when they accumulate too much in the vault. It is impossible to bury them, because there is nothing around the hospice but naked rocks. The institution is supported partly by its own revenues, partly by subscriptions and donations. The pass appears to have been known at a very early period; and a Roman road led down the Piedmontese side of the mountains. The remains of a massive pavement are still visible; and the cabinet of the hospice contains votive tablets, bronze figures and other antiques found in the vicinity. The hospice was founded in 962 by Saint Bernard of Menthon, an Italian ecclesiastic, for the benefit of those who performed pilgrimages to Rome. In May 1800 Napoleon led an army of 30,000 men, with its artillery and cavalry, into Italy by this pass. A carriage road has been built to its summit; but the importance of the pass has diminished with railroads.

**BERNARD, Little Saint**, a mountain of Italy, belonging to what are called the Graian Alps, about 10 miles south of Mount Blanc. It stands between Savoy and Piedmont, having the valley of the Isère, in the former, on the west, and that of the Doire, in the latter, on the east. The pass across it is one of the easiest in the Alps, and is supposed by many to be that which Hannibal used. The hospice, at the summit of the pass, has an elevation of 7,192 feet.

**BERNARD DE CHARTRES**, bār-nār dė shārtr (surnamed SYLVESTRIS), a writer of the 12th century, who has been lauded as the ablest Platonic of his time, and wrote two works, now lost, in one of which he endeavored to reconcile Plato and Aristotle, and in the other maintained the doctrine of a Providence, and proved that all material beings, possessing a nature subject to change, must necessarily perish. Another work under the name of Bernard Sylvestris still exists, and is composed of two parts, distinguished by the names of 'Megacosmus' and 'Microcosmus,' or the 'Great World' and the 'Little World.' He reduces all things to two elements — matter and ideas. Matter is in itself devoid of form, but susceptible of receiving it; ideas reside in the divine intellect, and are the models of life, and from their union with matter all things result. M. Cousin has published extracts from these works.

**BERNARD OF CLUNY**, Benedictine monk: b. at Morlaix, about 1100; d. 1156. He was a member of the Benedictine monastery at Cluny under Peter the Venerable, and is best known as the author of three hymns included in almost every English collection: «Jerusalem the Golden»; «For Thee, O Dear, Dear Country,» and «The World is Very Evil.» These are a part of his 3,000-line poem 'De Contemptu Mundi,' in dactylic hexameters, translated by J. M. Neale.

**BERNARD DE VENTADOUR**, bār-nār de vŏn-tä-dôr, French troubadour: b. about 1125; d. Dalon, about 1197. Love songs 'To Eleonore,' and various amatory lays to courtly dames, form the riches of his delicate verse.

**BERNARDAKIS, Demetrios**, bėr-nār'dä-kĭs, dä-mä'trē-ŏs, Greek poet and dramatist: b. Santa Marina, Lesbos, 2 Dec. 1834. After a course of study at Athens and in German universities he was (with one considerable intermission) professor of history and philology in the University of Athens, 1861–82, when he went back to Lesbos. He is author of a spirited Pindaric ode for a jubilee occasion, of several dramas and of a satire, 'The Battle of Cranes and Mice'; he has also written a 'Universal History'; a 'Church History'; and a spirited tractate, 'Confutation of a False Atticism,' directed against the would-be Attic purists.

**BERNARDES, Diego**, bėr-nār'dēs, dē-ä'gō, Portuguese poet: b. Ponte de Lima about 1530; d. 1605. He was called «the Sweet Singer of the Lima,» a streamlet immortalized in

his verse. He left his native valley in 1550 and attached himself to the master-singer, Sá de Miranda, who lived retired on his estate, Quinta da Tapada, a devotee of the Muses. Here Bernardes wrote 'The Lima'; 'Various Rimes — Flowers from Lima's Banks'; 'Various Rimes to the Good Jesu,' and other poems.

**BERNARDIN OF SIENA,** Italian ecclesiastic: b. Massa, Italy, 8 Sept. 1380; d. Aquila, Abruzzi, 20 May 1444. He became a Franciscan friar in a monastery near Siena in 1404, but desiring to make a pilgrimage to the Holy Land, was appointed a commissary of that country, and was thus enabled to gratify his wish. After his return he acquired a great reputation as a preacher, and three cities were rival suitors for the honor of having him as bishop. Bernardin, however, was unwilling to accept the distinction, and was made vicar-general of the friars of the Observantine order in Italy. He is said to have founded more than 300 monasteries. In 1450 he was canonized by Pope Nicholas V. His works appeared at Venice in 1591 in 4 volumes quarto, and at Paris in 1636 in 2 volumes folio. They consist of essays on religious subjects, sermons and a commentary on the book of Revelation. A biography by J. P. Toussaint was published (Regensburg 1873), and one by L. Bianchi (Siena 1888).

**BERNARDINES,** bėr'när-dēnz. See CISTERCIANS.

**BERNARDO DEL CARPIO,** bėr-när'dō dĕl kär'pē-ō, Spanish knight-errant (the fruit of a secret marriage between Ximena, the sister of Alphonso the Chaste, and of Don Sancho, lord of Saldagua): b. in the 9th century. Alphonso, irritated at the marriage, put out the eyes of Don Sancho and imprisoned him in a castle, but spared Bernardo and brought him up carefully at his court. In course of time Don Bernardo grew up to be a warrior, and distinguished himself in the Moorish wars, in the hope that the King would be bent to pity and set his father at liberty. Alphonso was inflexible, and Bernardo withdrew to his paternal domains; and leaguing with other lords opposed to the court, set him at defiance. On the accession of Alphonso the Great, Bernardo returned to court, and again performed many exploits against the Moors, hoping to be rewarded with his father's freedom. He was once more denied the boon, and withdrew as before, not only leaguing with his friends, but making alliance with the Moors. Alphonso agreed at length to give up his father on receiving the surrender of the castle of Carpio. Bernardo, true to his word, performed his part of the stipulation, and then learned with indignation that Alphonso had practised an infamous deception upon him, as his father had been for some time dead. He disdained any longer to tread the Spanish soil, and removed to France, where he spent the remainder of his life as a knight-errant.

**BERNAUER,** bėr-now-ėr, **Agnes,** Bavarian lady celebrated for her beauty and her unfortunate fate; d. 2 Oct. 1435. She was the daughter of a poor citizen, said to be a barber of Augsburg. Duke Albert of Bavaria, only son of the reigning prince, met Agnes at a tournament given in his honor by the grandees of Augsburg, became enamored of her, and, as he could not prevail on her to be his mistress, secretely married her. He conducted her to his own castle of Vohburg, and for a time succeeded in concealing the alliance he had contracted; but his father wishing to marry him to Anne, daughter of the Duke of Brunswick, he was compelled to acknowledge his marriage with Agnes. His father refused to credit it, and having caused the Duke to be denied admission to a tournament on the plea that he was living unlawfully with a woman, Albert openly proclaimed his marriage and caused Agnes to be recognized as Duchess of Bavaria, giving her for residence the castle of Straubing on the Danube. The Duke of Bavaria, incensed at this open avowal of a misalliance, caused Agnes to be seized in her castle during the absence of his son, brought her before a tribunal specially constituted, where she was accused of magic, and being condemned, had her hands tied together and was thrown into the river. Albert in revenge took arms against his father, but the Emperor Sigismund finally reconciled them. The story is a favorite theme with the Bavarian poets.

**BERNAY,** bär-nā, France, town in the department of Eure, 25 miles west-northwest of Evreux and 17 miles southeast of Lisieux, on the right bank of the Charentonne. It has two fine old churches, a communal college, a hospital, a court of first resort, a board of manufactures, an agricultural society and a savings bank. It has important manufactures of cloth and flannel, tape, linen and cotton goods; and spins a good deal of cotton, thread and worsted. It has also bleachfields, dye works, tanneries, etc. Its trade is principally in grain, cider, cloth, iron, paper, leather, linen, horses and cattle. The horse-fair, held in Lent, is one of the greatest in France, and is attended by purchasers from all parts of the country. Pop. 7,883.

**BERNBURG,** bėrn-burH, Germany, town in the duchy of Anhalt, capital of the former duchy of Anhalt-Bernburg; on both sides of the Saale, northwest from Leipzig, with which, as well as with Berlin and Magdeburg, it is connected by railway. It is divided into the old, the new and the high town, the first two surrounded by walls and communicating by a bridge 173 feet long. Bernburg is well built and contains several well paved and well lighted streets. The principal building is the palace, situated, with a garden, on the highest part of the high town. It is very ancient, but has received numerous modern additions and contains a picture gallery, theatre and church. Besides an oil-mill and several breweries and distilleries, there are manufactories of paper and earthenware, copper and tin wares, lead, zinc, cement and starch, etc. Old Bernburg was a fortified town as early as the 10th century. Pop. about 35,000.

**BERNE-BELLECOUR, Étienne Prosper,** bärn-bĕl-koor, ā-tē-ĕn prŏs-pėr, French painter: b. Boulogne, 29 July 1838; d. 1910. After some years of study under Barras and Picot, he made a reputation by his spirited representations of episodes in the Franco-Prussian War of 1870. He received a first-class medal in the Paris Salon of 1872, the Legion of Honor in

1878 and a second-class medal at the Paris Exposition of 1889. His best-known works are 'Cannon Shot'; 'The Intended,' and 'In the Trenches,' the last two in the Metropolitan Museum, New York; 'Attack on the Château'; 'To Arms!'

**BERNERS, John Bourchier,** boor'shē-ā, LORD, English baron, a descendant of the Duke of Gloucester, youngest son of Edward III: b. 1474; d. 1533. He was a member of Parliament, 1495–1529; aided in suppressing the Cornish insurrection, 1497; Chancellor of the Exchequer, 1515; Ambassador to Spain, 1518, and for many years governor of Calais. He translated 'Froissart's Chronicles' (1523–25) and other works, his translation of the former being a sort of English classic.

**BERNERS,** or **BARNES, Dame Juliana,** LADY, English prioress and author: fl. 15th century; daughter of Sir James Berners, who was beheaded in the reign of Richard II. Little more is known than that she was prioress of the nunnery of Sopewell, near Saint Albans, and has her name prefixed as writer or compiler to one of the earliest and most curious productions of the English press. The first edition, entitled 'The Treatyses Pertynynge to Hawkynge, Huntynge and Fysshynge with an Angle' (of which only three perfect copies are known), printed in the abbey of Saint Albans in 1486, treats of hawking, hunting and heraldry. A second edition was printed by Wynkyn de Worde in 1496. This work, under the title of the 'Book of Saint Albans,' became a popular manual of sporting science and was many times reprinted in the 16th century. It has latterly been issued in facsimile of the original print.

**BERNHARD,** bèrn'härt (DUKE OF WEIMAR), German soldier (fourth son of Duke John of Saxe-Weimar): b. 6 Aug. 1604; d. 8 July 1639. He entered first the service of Holland and afterward the Danish army employed in Holstein against the troops of the Emperor. When Gustavus Adolphus entered Germany, Bernhard joined him (1630) and was present at the attack upon Wallenstein's camp in the neighborhood of Nuremberg, 24 Aug. 1632. In the battle of Lützen, 6 Oct. 1632, he commanded the left wing of the Swedish army and took over the command of the army on the death of Gustavus Adolphus, and, although himself severely wounded, put the right wing of the imperial troops to flight. In 1633 he captured Ratisbon and Straubing and frustrated Wallenstein. His impetuosity caused the defeat at Nördlingen (q.v.), 24 Aug. 1634, where he narrowly escaped being made prisoner. France, now entering into a closer alliance with Sweden (1634), Bernhard carried on the war in the country adjacent to the Rhine, took the fortress of Zabern and vanquished the forces of the Emperor in several battles. A brilliant campaign in 1638 culminated in the capture of Breisach. Friction over the occupation of Breisach is said, on unsubstantial foundations, to have been the cause of his death by poison at the instigation of Richelieu. He died suddenly at Neuburg on the Rhine.

**BERNHARDI, August Ferdinand,** bèrnhär'dē, German scholar: b. Berlin 1769; d. there 1820. In his youth his attention was directed to universal language (that is, to language as far as it is common to all rational beings), to the mystery of its construction — the mathematics, as it were, of language. Bernhardi, considering all different languages as a whole, endeavored to discover a universal grammar common to them all. The result of his researches appears in his works, 'Abstract Grammar' (2 vols., 1801); 'Grammar in Its Application' (1803); and 'Elements of the Science of Language,' in which many philosophical principles of language are laid down. He was a professor and director of a classical school in Berlin.

**BERNHARDI, Friedrich von,** Prussian general and military writer: b. 22 Nov. 1849, the son of an able diplomat and historian and grandson of a philologist and his poet wife, the sister of Ludwig Tieck. He was hardly known until the English translation of his 'Deutschland und der nächste Krieg' (1911) was seized upon in England as revealing the cause of the European War. In it he makes some interesting statements, declaring that the conflict between England and Germany was an eventuality determined upon in 1902. He predicted in 1911 the defection of Italy from the Triple Alliance. Recalling the British capture of the Danish fleet in 1807 and the bombardment of Alexandria in 1884, he warned Germany that she would have to fight Russia, France and England (the Entente) with only the assistance of Austria. The Prussian disaster of Jena in 1806 he laid to a fatuous pacifism, which was being repeated in a Germany devoted to commercialism and enjoyment. He calls war a biological necessity, an indispensable regulative element in the life of man, due to the universal struggle for existence, possessions, power, sovereignty. Only the weary, spiritless ages have toyed with the dream of perpetual peace, and if strong nations establish peace congresses and Hague tribunals he thinks pacific ideals are seldom the real motive of their action but only a cloak under which to further selfish political aims. No power exists which can judge between states and make its judgment final. Increase of population and trade rivalry make expansion imperative or nations' decay inevitable. War does more to arouse national life and to expand national power than any other known means. National needs may demand an aggressive war. Most unfavorably situated in the midst of mighty colonial powers, who are determined not to allow German expansion, Germany must be prepared to «gain a start» on her probable enemies. She must strike quick and with all force in order to win. The most efficient and most dangerous foe must be struck first. It is the moral duty for the state to begin the struggle before the rival nations gain a lead which cannot be won back. As Germany was vulnerable only in the northwest, Bernhardi was convinced that in case of war England and France would attempt to turn Germany's strategical right flank between Flushing and Wesel (a fortress near the Dutch border), at the same time seizing a naval base on the northwest coast of Germany. Hence he regarded the neutrality of Belgium as impossible. Germany must maintain a defensive war by seas, controlling the Baltic at all hazards, but must

defeat France decisively on land and destroy her Channel naval ports. The occupation by the enemy of the Danish islands must be prevented at all hazards. For Bernhardi the danger is in the west, while Russia's defeat is presupposed, providing Germany is successful in the west. He expects the effective blockade of the German coast and urges the development and vigorous use of the submarine and the aerial service. He is opposed to a sea battle with superior hostile forces, but torpedo-boat attacks by night are recommended. "The blockading fleet must be given no breathing-time" and must be "whittled down." Germany's "whole history may turn upon the impregnability of the fortifications which, in combination with the fleet, are intended to guard our coasts and naval bases, and should inflict such heavy losses on the enemy that the difference of strength between the two fleets would be gradually equalized." He accepts the principle of the submarine blockade and the sinking of all enemy or neutral ships to or from hostile ports. As a popular explanation of Germany's defense, Bernhardi's book is keen and ingenious. Less so is the program of offense in 'Unsere Zukunft, ein Mahnwort an das deutsche Volk,' to which the translator gives the title 'Britain as Germany's Vassal.' This contemplates Turkey's making common cause with the Central Powers from the beginning. Other books by Bernhardi are 'How Germany Makes War'; 'Cavalry'; 'On War of To-day' (trans. by Karl von Donat).

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**BERNHARDI, Theodor von,** German historian and diplomat: b. Berlin, 6 Nov. 1802; d. Kunersdorf, Silesia, 12 Feb. 1887. His diplomatic career was important and afforded him special facilities for compiling a 'History of Russia and of European Politics during the Years 1814–31' (1863–77); 'Frederick the Great as a Military Commander' (1881); and similar works, all of value.

**BERNHARDT, Rosine,** bārn-härt, rō-zēn, better known as SARAH, French actress: b. Paris, 23 Oct. 1845. Of Jewish descent, her father French, her mother Dutch, her early life was spent largely in Amsterdam. In 1858 she entered the Paris Conservatoire and gained prizes for tragedy and comedy in 1861 and 1862, but her début at the Théâtre Français in 'Iphigénie' and Scribe's 'Valérie' was not a success. After a brief retirement she reappeared at the Gymnase and the Porte Saint-Martin in burlesque, and in 1867, at the Odéon in higher drama. Her success in Hugo's 'Ruy Blas' in 1872 led to her being recalled to the Théâtre Français, since which she has abundantly proved her dramatic genius. In 1879 she visited London and again in 1880, about which time she severed connection with the Comédie Française under heavy penalty. In 1880, 1887, 1891, 1896 and 1900 she made successful appearances in the United States, and between and after these dates visited Switzerland, Holland, South America, Italy, Algeria, Australia, etc. In 1899 she appeared in a new rendering of 'Hamlet' in Paris and scored a most flattering triumph. Among her most successful impersonations are 'Théodora,' 'Fédora,' 'La Tosca' and 'Cléopâtre' in the plays bearing those titles. In 1882 she married M. Damala, a Greek, whom she divorced not long afterward. She visited America again in 1911, appearing in a repertoire of her best-known rôles, and in the spring of 1913 returned and played a short engagement, her repertoire consisting of single acts selected from 'Phèdre,' 'Lucrèce Borgia,' 'La Dame aux Camelias,' 'La Tosca' and a new one-act play, 'Une Nuit de Noël, sous la terreur,' written by her son Maurice Bernhardt in collaboration with Henri Cain. Owing to a slight accident, she was unable to walk without assistance during this engagement, but her matchless voice was unimpaired and she received an ovation at every performance. Her position as the first actress of her day is undisputed. She is mistress of every item of stagecraft. With the exception of Coquelin, no actor or actress of her time has approached her in the perfection of her art. In addition to her extraordinary gifts as an actress, she has shown considerable talent in sculpture, painting and writing. She has exhibited both painting and sculpture at the Salon, where her piece 'Après la tempête' (1876) received honorable mention. In 1907 she published a volume of 'Mémoires.' She has written two plays, 'L'aveu,' a one-act comedy, produced at the Odéon in 1888, and 'Adrienne Lecouvreur' (1907), based on the play of the same name by Scribe and Legouvé. She was made a member of the Legion of Honor in 1913, and in the same year, in Paris, won one of her greatest triumphs in 'Jeanne Doré.' Consult Jules Huret, 'Sarah Bernhardt,' with a preface by Edmond Rostand (Eng. trans., Philadelphia 1909), and her own 'Mémoires' (Paris 1907).

**BERNHARDY, Gottfried,** bèrn'här-dē gŏt-frēd, German classical philologist: b. Landsberg-on-the-Warthe, 20 March 1800; d. Halle, 14 May 1875. He was professor at the philological seminary in Halle and librarian of the university. His principal works are 'Greek Syntax Scientifically Considered' (1829), an historical study of the subject; 'Outlines of Roman Literature' (5th ed., 1872); 'Outlines of Greek Literature'; a supplement to the first-named treatise, entitled 'Paralipomena [Omission] in [the Work on] Greek Syntax' (1854–62); and a monumental edition of Suidas' 'Lexicon' (1834–53).

**BERNI, BERNA,** or **BERNIA, Francesco,** bèr'nē, bèr'nä or bèr'nē-ą, Italian poet: b. Lamporecchio, Tuscany, about 1497; d. 26 July 1536. His family was noble but poor, and young Berni went to Florence and, at the age of 19, to Rome, where he lived under the care of his relation, Cardinal Bibbena. At length he entered the service of Ghiberti, bishop of Verona, datary of the papal chancery, as secretary. In the hope of promotion, he took orders; but sought recreation in amusements which displeased the prelate. A society had been established in Rome, consisting of young ecclesiastics of a jovial temper like Berni, and of a poetical vein, who, in order to denote their love for wine and their careless gaiety, called themselves *i vignajuoli* (vine-dressers). They laughed at everything and made sport in verse of the most serious, nay, the most tragic matters. Berni's verses were the most success-

ful and were written in so peculiar a style that his name has been given to it (*maniera bernesca* or *berniesca*). When Rome was sacked by the troops of the Constable Bourbon, 1527, Berni lost all that he possessed. He afterward made several journeys, with his patron Ghiberti, to Verona, Venice and Padua. At length, wearied with serving and satisfied with a canonship in the cathedral at Florence, he retired to that place. The favor of the great, however, which he was weak enough to court, brought him into difficulties. He was required to commit a crime, and his refusal is said to have cost him his life. Alessandro de' Medici, at that time Duke of Florence, lived in open enmity with the young Cardinal Ippolito de' Medici. Berni was so intimate with both that it is doubtful which first made him the proposal to poison the other. Certain it is that the cardinal died by poison in 1535, and it is probable that Alessandro caused Berni's death. In the burlesque style of poetry, Berni is still considered the best model. His satire is often very bitter and frequently unites the good humor of Horace with the causticity of Juvenal. The extreme licentiousness of his writings is his greatest fault. Berni also wrote Latin verses very correctly and was well acquainted with Greek. His 'Burlesque Verses' have great merit; so also has his rifacimento of Boiardo's 'Orlando innamorato.'

**BERNICE**, in biblical history, was the daughter of Herod Agrippa I and married to King Herod of Chalcis, who was her uncle. After his death she lived with her brother Agrippa, and subsequently became the wife of Polemon, the King of Cilicia, but soon left him and returned to her brother. Josephus, Tacitus and Suetonius state that she was mistress of Titus and Vespasian.

**BERNICLE** or **BARNACLE GOOSE**, a large goose of northern Europe and Greenland, allied to the brant and named *Branta leucopsis*, a name identified with strange old fables. It differs from the brant mainly in its white cheeks and the lavender-gray of the mantle. This goose is a common winter visitor to western Europe, retiring in summer to Arctic regions to breed, but the region and character of its nesting remain undiscovered. Up to comparatively recent times it was the belief of the European peasants that this goose was born from the stalked barnacles which adhere to driftwood and sometimes to the branches of trees that reach down into the sea at high tide. Circumstantial accounts were given of the birth of the young, whose tiny wings (the waving filaments of the feeding cirripeds) could be seen sticking out of the shells from which they were supposed to escape. So firmly was this fixed in the minds of the people that it is given and illustrated with much detail as truth in many books of the time, and the Roman Church permitted these geese to be eaten on holy days because they were sea-born and therefore "fish"! What is less generally known is that the cirripeds were named after the bird, as their supposed parent, and not the bird after the crustacean. Bernicle, like "brant," refers to the "burnt" black color of the birds, as explained in the 'English Dictionary' and by other authorities. Others derive bernicle from *hibernacula*, as the bird was supposed to come from Ireland. The name has been adopted as generic for a large group of the geese usually distinguished by sportsmen as "brants" (q.v.).

**BERNIER**, bĕr-nyā, **Camille**, French painter: b. 1823; d. 1902 or 1903. His best-known works are 'The Abandoned Lane' (La Rochelle); 'Road near Bannalec' (Nantes); and 'Morning' (Lille).

**BERNIER, François**, French physician and traveler: b. Angers, about 1625; d. Paris 1688. He set out on his travels in 1654, and after visiting Egypt and Palestine, went into India, where his skill in medicine brought him into notice, and he remained for 12 years, residing chiefly at Delhi, as physician to the great Mogul Emperor Aurungzebe. On one occasion he accompanied the Prime Minister on his march, at the head of an immense army, to the conquest of Cashmere, and in his travels, recording all that he saw, has given accounts full of interest and recognized by subsequent travelers as remarkable for their fidelity. After his return to France he not only compiled his 'Travels' and several volumes of history relating to the empire of the Great Mogul, but turned his attention to philosophical subjects and published an abridgment of the philosophy of Gassendi. He also wrote a treatise entitled 'Traité du Libre et du Volontaire.'

**BERNINA**, bĕr-nē'nȧ, a mountain of the Rhætian Alps, 13,290 feet high, in the Swiss canton of Grisons, with remarkable and extensive glaciers. Its summit was first attained in 1850. The Bernina Pass, which attains an elevation of 7,642 feet and over which a carriage road was completed in 1864, leads from Pontresina to Poschiavo.

**BERNINI, Giovanni Lorenzo**, bĕr-nē'nę, jō-vän'nę lō-rĕn'zō, called IL CAVALIERE BERNINI, Italian sculptor and architect: b. Naples, 7 Dec. 1598; d. Rome, 28 Nov. 1680. His father was a sculptor, and even in childhood he showed remarkable aptitude in this art. Thus richly endowed by nature and favored by circumstances, he rose superior to the rules of art, creating for himself an easy manner, the faults of which he knew how to disguise by its brilliancy. One of his first works was the marble bust of the prelate Montajo; and in this type of art he excelled from first to last. He was not yet 18 when he produced the 'Apollo and Daphne,' in marble, a masterpiece of grace and execution. Looking at this group near the close of his life, he declared that he had made very little progress since the time when that was produced. Without forsaking sculpture, Bernini's genius embraced architecture, and he furnished the design for the canopy and the pulpit of Saint Peter's, as well as for the circular place before the church. Among his numerous works were the palace Barberini, the belfry of Saint Peter's, the model of the monument of the Countess Matilda and the monument of Urban VIII, his benefactor. Urban had scarcely closed his eyes and Innocent X ascended the papal throne, when the envy engendered by the merits of the artist and the favor bestowed on him broke forth. His enemies triumphed, but he regained the favor of the Pope by a model for a fountain. About the same time he erected the palace of Monte Citorio, Alexander VII, the successor of Inno-

cent X, required of him a plan for the embellishment of the Piazza di San Pietro. The admirable colonnade, so beautifully proportioned to the Basilica, was built under the direction of Bernini. We may also mention the palace Odescalchi, the Rotunda della Riccia and the house for novices belonging to the Jesuits, on Monte Cavallo. Louis XIV having invited him to Paris, he set out from Rome in 1665, accompanied by one of his sons and a numerous retinue. Never did an artist travel with so great pomp and under such flattering circumstances. The reception which he met with in Paris was highly honorable. He was first occupied in preparing plans for the restoration of the Louvre, which, however, were never executed. Cardinal Rospigliosi having become Pope, Bernini was admitted to an intimate intercourse with him and charged with several works, among others with the decoration of the bridge of Saint Angelo. In his 70th year this indefatigable artist executed one of his most beautiful works, the tomb of Alexander VII. He was buried with great magnificence in the church of Santa Maria Maggiore. To his children he left a fortune amounting to about 3,300,000 francs. Bernini's favorite maxim was *Chi non esce talvolta della regola, non passa mai.* Thus he was of opinion that, in order to excel in the arts, one must rise above all rules and create a manner peculiar to one's self.

**BERNIS, François Joachim de Pierres de,** bār-nęs, frŏn-swä jō-ä-kĕm dĕ pē-ār dĕ, French cardinal and minister of Louis XV: b. Saint Marcel, de l'Ardèche, 1715; d. Rome, 2 Nov. 1794. Madame de Pompadour presented him to Louis XV, who, being pleased with him, assigned to him an apartment in the Tuileries, with a pension of 1,500 livres. He went as Ambassador to Venice, and after his return enjoyed the highest favor at court and soon became Minister of Foreign Affairs. The political system of Europe was changed at that time. France and Austria, hitherto enemies, united in an offensive and defensive alliance, which was succeeded by the Seven Years' War, so unfortunate for France. Bernis has been designated by several writers as the chief author of this alliance. Duclos, however, asserts that it was the intention of Bernis to maintain the old system which, since the time of Henry IV and especially since the time of Richelieu, had made France the protectress of the less powerful states of Germany and the rival of Austria. Oppressed by the misfortunes of his country, which, in part at least, were ascribed to him, Bernis surrendered his post and was soon after banished from court. His disgrace lasted till the year 1764, when the King appointed him archbishop of Albi and, five years later, Ambassador to Rome. Here he remained till his death. In the name of his court, and against his own opinion, he labored to effect the abolition of the order of the Jesuits. When the aunts of Louis XVI left France in 1791 they fled to him for refuge and lived in his house. The Revolution deprived him of his fortune and the means of indulging his generous disposition. The easy poetry of youth had procured him a place in the French Academy, but he himself is its severest critic. Voltaire had a great esteem for his talents, his judgment, his criticisms and his character, as is evident from their correspondence, which, in every other respect, is very honorable to Bernis. A collection of Bernis' works was published in 1797 by Didot, and another in 1825.

**BERNOUILLI,** bār-noo-yę, or **BERNOULLI,** a family which has produced nine distinguished men, who have cultivated mathematical and physical science with success. The family, emigrated from Antwerp on account of religious persecutions under the administration of the Duke of Alva, fled first to Frankfort and afterward removed to Basel. Important members of the family were Nicolas (1623–1708), Jakob (1654–1705), Johann (1667–1748), Nicolas (1687–1759), Nicolas (1695–1726), Daniel (1700–82), Johann (1710–90), Johann (1744–1807) and Jakob (1758–89).

**BERNOUILLI, Daniel,** Swiss philosopher: b. Groningen, 9 Feb. 1700; d. 1782. He studied medicine, he took the doctor's degree, and at the age of 24 was offered the presidency of an academy about to be established at Genoa, but in the following year accepted an invitation to Saint Petersburg. Accompanied by his younger brother John, he returned to Basel in 1733; became there professor of anatomy and botany; in 1750 professor of natural philosophy; resigned this place, because of his advanced age, to his brother's son, the younger Daniel Bernouilli, in 1777 and died in 1782. He was one of the greatest natural philosophers as well as mathematicians of his time. At 10 different times he received a prize from the Academy of Paris. In 1734 he shared with his father a double prize, given by this academy for their joint essay on the causes of the different inclinations of the planetary orbits. Most of his writings are contained in the Transactions of the Saint Petersburg, Paris and Berlin academies, of which he was a member. His principal work is the 'Hydrodynamica,' in which he first developed the kinetic theory of gases.

**BERNOUILLI, Jakob, Jacques** or **James,** Swiss mathematician: b. Basel 1654; d. 1705. The differential calculus discovered by Leibnitz and Newton was applied by him to the most difficult questions of geometry and mechanics; he calculated the loxodromic and catenary curve, the logarithmic spirals, the evolutes of several curved lines and discovered the «numbers of Bernouilli,» as they are called. Unquestionably the most original and able representative of the second generation of eminent mathematicians in this family (see BERNOUILLI or BERNOULLI), he probably outranks also all the other Bernouillis of the 17th and 18th centuries in that quality of intellectual venturing that appears in the posthumous work entitled 'Ars Conjectandi' (1713). Noteworthy are also his 'Conamen Novi Systematis Cometarum' (Amsterdam 1682); 'Dissertatio de Gravitate Ætheris' (Amsterdam 1683); and the two-volume edition of his works, 'Iacobi Bernoulli Basileensis Opera' (Geneva 1744).

**BERNOUILLI, Johann,** Swiss mathematician: b. Basel 1667; d. 1 Jan. 1748. He was one of the greatest mathematicians of his time and the worthy rival of Newton and Leibnitz. He was destined for commerce, but his inclination led him to the sciences, and from the year 1683 he principally devoted himself to medicine and mathematics. To him and his brother James we are indebted for an excel-

lent treatise on the differential calculus. He also developed the method of proceeding from infinitely small numbers to the finite, of which the former are the elements or differences, and called this method the *integral calculus*. In 1690–92 he made a journey to France, where he instructed the Marquis de l'Hôpital in mathematics. At this time he discovered the exponential calculus, before Leibnitz had made any communications respecting it, and made it known in 1697. In 1694 he became doctor of medicine at Basel, and in 1695 went, as professor of mathematics, to Groningen, where he discovered the mercurial phosphorus or luminous barometer, for which he received from King Frederick I of Prussia a gold medal and was made a member of the Academy in Berlin, afterward of that of Paris. After the death of his brother in 1705, he received the professorship of mathematics at Basel, which he held until his death. His collected works were published at Geneva in 1742.

**BERNOUILLI, Nicolas,** nephew of Johann Bernouilli, Swiss mathematician: b. Basel 1687; d. 1759. He studied law but more particularly devoted himself to mathematics; in 1705 went to Groningen to Johann Bernouilli; returned, however, with him to Basel toward the close of the year and became there professor of mathematics. He traveled through Switzerland, France, Holland and England, and in 1713 became a member of the Academies of Science in London and Berlin. On the recommendation of Leibnitz, he went as professor of mathematics to Padua in 1716, but returned to his native city in 1722 as professor of logic. In 1731 he became professor of the Roman and feudal law in that place.

**BERNSTEIN, Eduard,** leader of the German social democracy: b. Berlin, 6 Jan. 1850. As a young man he edited socialistic newspapers in Berlin until the vehemence of his opposition to the government of Bismarck made it desirable for him to leave Germany. After the publication of his criticism of Marxist doctrines he was permitted to return to Germany, where in 1901, he became editor of *Vorwärts*. In 1902 he became editor of *Dokumente des Sozialismus*. He contends that every movement for the advancement of the people should be encouraged and taken advantage of by the common people, whom he urges to take an active part in politics. He regrets the materialistic conception of history as inadequate to explain modern social evolution. He was elected to the Reichstag in 1902, failed at the elections of 1907, but was returned in 1912. His published works, besides an edition (1891–93) of the speeches and writings of Lasalle (translated into English, 1893, by E. Aveling), include 'Die Voraussetzungen des Sozialismus und die Aufgaben der Sozialdomokratie' (1899, 1909); 'Zur Geschichte und Theorie des Sozialismus' (1904); 'Die heutige Sozialdemokratie in Theorie und Praxis' (1905); 'Die Geschichte der Berliner Arbeiterbewegung' (1907–10).

**BERNSTORFF, Andreas Peter,** bĕrn'stôrf, COUNT VON, Danish statesman: b. 1735; d. 1797. He was Foreign Minister 1773–80, and 1784–97. He introduced a new system of finance, prepared the abolition of villanage in Schleswig and Holstein. He was instrumental in making an exchange of territory, by which the Gottorp part of Holstein was ceded to Russia for Oldenburg and Delmenhorst. He was a pronounced Liberal, and contended for the freedom of the press.

**BERNSTORFF, John Hartwig Ernst,** COUNT VON, Danish statesman in service of the King of Denmark: b. Hanover 1712; d. 1772. He was employed in divers embassies, and afterward filled with consummate ability, the office of Foreign Minister to Frederick V for about 20 years, resigning in 1770. He was called by Frederick the Great "the oracle of Denmark."

**BERNSTORFF, Johann Heinrich A.,** COUNT VON, German diplomat: b. London, 14 Nov. 1862. He received his early education in England, where his father was the German ambassador — before 1871, Prussian minister. During the Franco–Prussian war he acted as a press agent in London for his government, transmitting to Berlin all the news that might prove useful to his country. Knowing French, he read the indiscreet revelation by a Paris newspaper of MacMahon's sudden change of march just before Sedan, which news he wired to Berlin. He entered the German army (artillery) in 1881, was made attaché at Constantinople in 1889, served in the Foreign Office in 1890, secretary of Legation at Belgrade 1892, Dresden 1894, Saint Petersburg 1896, and Munich 1898. In 1902 he was appointed advisor to the embassy in London, and in 1908 was transferred to Egypt as German Consul-General. On 14 Nov. 1908 he was appointed Ambassador and Plenipotentiary Extraordinary to the United States. From the outbreak of the European War he carried on a strenuous press campaign throughout America with the object of enlisting sympathy for the German cause. During 1915 the United States Department of Justice unearthed a conspiracy carried on in New York by Hans von Wedell and Carl Ruroede to forge passports to enable German reserve officers to return home. Ruroede was arrested and sentenced to three years' imprisonment; von Wedell escaped on a Norwegian vessel, but was taken off by a British cruiser which was shortly afterward sunk by a submarine. Correspondence seized by the secret service implicated Count Bernstorff's naval and military attachés, Captains Boy-Ed and von Papen, who were dismissed from the United States. Later various checks for large sums to spread pro-German propaganda were traced to Count Bernstorff, who had telegraphed home for authority to spend $50,000 "in order . . . to influence Congress." Consult *World's Work* (March 1918). See WAR, EUROPEAN.

**BERNWARD, Saint,** bishop of Hildesheim: b. about 950; d. 20 Nov. 1022. He was equally distinguished in theology and art, devoting himself to painting, gold and mosaic work. About 988 he was charged by the Empress Theophania, widow of Otho II, to undertake the education of her seven-year-old son Otho III, in conjunction with Gerbert (afterward Pope Sylvester II). Bernward taught the young king mathematics; the actual manual which he composed for these lessons is still preserved in the cathedral at Hildesheim. The Empress Regent had some years before brought a colony of Byzantine artists and craftsmen from Constantinople. These were settled in Germany,

some building churches and others engaging in painting and enameling. Bernward industriously studied their methods and, from the time he was consecrated bishop (7 Dec. 992) he divided his labors between the administration of his diocese and of converting his episcopal town into a flourishing artistic and literary centre. One of his predecessors had begun the construction of the cathedral, and a large stock of golden ingots and precious stones had been accumulated. These the bishop proceeded to utilize for the ornamentation of his church; he melted the gold and fashioned it into decorations, set the stones himself, painted and enameled, and drew architectural designs. He equally cultivated literature; he founded a school for copyists and himself prepared the original manuscripts for them to work from. He also traveled in France and Italy, often taking parties of his pupils with him for their enlightenment. This versatile prelate, whose life has aptly been described as one of the most remarkable biographical monuments of the Middle Ages, combined the functions of priest, teacher, artist and diplomat. He even built the fortifications of Hildesheim, and on at least one occasion accompanied a military expedition in war. He was canonized in 1194, or 172 years after his death.

**BEROALDO**, bā-rō-āl'dō, **Filippo**, Italian scholar: b. Bologna 1453; d. 1505. He gave instruction, chiefly by lectures, at Parma, Milan and Paris; finally, in response to the wish of his fellow-townsmen, returning to Bologna, where he spent the remainder of his life as professor of *belles-lettres*. He is now chiefly known as the editor of some good editions of the classics, and the author of a curious tract entitled 'Declamatio Ebriosi, Scortatoris et Aleatoris,' in which the drunkard, rake and gambler, represented as three brothers, debate which of them, as being the most vicious, should be excluded from sharing in his father's inheritance.

**BEROE**, daughter of Oceanus; also the name of several women connected with Thrace, Illyria etc.; also a genus of animals, the typical one of the family *Beroidæ*. The beroes are oval or globular-ribbed animals, transparent and gelatinous, with cirri from pole to pole, and two long tentacles fringed with cirri, which aid them in breathing and in locomotion. They have a mouth, a stomach and an anal aperture. They are free swimming organisms inhabiting the sea, sometimes rotating, and at night phosphorescent.

**BEROSUS**, according to some a Chaldæan by birth, and a priest of the temple of Belus at Babylon, and according to others a contemporary of Alexander the Great, is celebrated both as an historian and an astronomer, though it has been alleged that his name merely has been used for the purpose of giving a reputation to what others had written. His history, giving an account of the Babylonian Chaldæans and their kings, consisted of three books written in Greek, and professed to be founded on the ancient archives of the temple of Belus. It has been preserved only in fragments, contained in the writings of Josephus, Syncellus, Eusebius and others. He was also the author of a treatise on Chaldæan astrology. According to Pliny the astronomical observations contained in the works of Berosus extended over a period of 480 years.

**BERQUIN, Arnaud**, bĕr-kăń, ār-nō, French writer: b. 1749; d. 1791. He first attracted notice by poems and translations from the English but is best known by his work entitled 'L'Ami des Enfants' (1782–83), crowned by the Academy and repeatedly translated. His complete works (20 volumes) were published in Paris in 1803.

**BERQUIN**, ber-kań', **Louis de**, the first Protestant martyr in France: b. 1490; d. Paris, 17 April 1529. He was a gentleman of Artois, a friend of Badius, the savant. When, in 1523, the police began to seize Luther's works with a view to suppressing Protestantism, they found among Berquin's books some manuscripts of his own writing that were pronounced heretical. As he refused to retract, he was thrown into prison. Francis I, whose counsellor he was, obtained for him his freedom; and Erasmus, always his friend, tried in vain to prevent him from exposing his life in a useless struggle. His fixed opinions and intrepid nature, however, having thrown him into prison three times, caused him to be condemned to death, and he was burned alive.

**BERREDO E CASTRO**, bār-rā'dō ē kāsh'trō, Portuguese soldier and historian: b. Serpa, about 1680; d. Lisbon, 13 March 1748. Having entered the army he fought at the battle of Saragossa (1710), so distinguishing himself on that occasion that he was made governor-general of the province of Maranhão, Brazil, and in 1718 he became captain-general of Mazagao. The rest of his life was spent upon his history, which is of great value as an original source of information for the period of which it treats. It is entitled 'Annaes Historicos, do estado do Maranhão' (1749).

**BERRETTA.** See BIRETTA.

**BERRIEN, John Macpherson**, American lawyer and politician: b. New Jersey, 23 Aug. 1781; d. Savannah, Ga., 1 Jan. 1856. He was the son of an officer in the war of the American Revolution, graduated at Princeton in 1796, was admitted to the bar of Georgia at the age of 18, and gradually rose in reputation till he was elected, in 1809, solicitor of the eastern district of Georgia. He became judge of the same district the next year, retaining the latter office till 1822, when he entered the Georgia senate, from which he was transferred, in 1824, to the Senate of the United States. He established in that body a high reputation as an orator and statesman, was appointed Attorney-General of the United States in 1829, resigned this office in 1831 when General Jackson's Cabinet became inharmonious, resumed the practice of his profession in Savannah till 1840, when he was elected again to the national Senate, and was re-elected in 1846.

**BERRUGUETE**, bĕr-roo-gā'tę, **Alonzo**, Spanish sculptor, painter and architect: b. Paredez de Nava, Spain, about 1486; d. Toledo 1561. He went in or soon after 1504 to Florence, studied in the school of Michelangelo, and became intimate with Bandinelli, and other celebrated artists. In 1523, three years after his return to Spain, he was appointed painter to Charles V. His skill as a sculptor is seen to great advantage in the choir of the cathedral of Toledo. Berruguete's work there was

begun in 1539 and finished in 1548. Authentic paintings by him (and it is to be said that those are few the authenticity of which is above dispute) have been preserved, in the surroundings for which they were painted, at Salamanca, and in the old capital, Valladolid, where Berruguete built a house for himself in 1528. See SPAIN — SPANISH PAINTING, ARCHITECTURE AND SCULPTURE.

**BERRUYER, Joseph Isaac,** French Jesuit: b. Rouen 1681; d. Paris 1758. He was the author of a 'History of God's People,' 1728–58, written in a strong, secular vein. It created a scandal when the first part appeared, and the Jesuit General ordered the writer to prepare an expurgated edition, which he did, though the second version was little better than the first, which was devoted to the Old Testament. The work was censured at Rome in 1734; the second part, 'The Gospel,' printed in Paris 1753, was prohibited by the French clergy. When the third part 'Epistles' appeared in Lyons in 1758, Pope Clement XIII declared that the measure of scandal had overflowed, and ordered special prayers to the Holy Trinity for the outrage inflicted by the works of Berruyer.

**BERRY,** bă-rę, **Carolina Ferdinanda Louisa, Duchesse de,** widow of the second son of Charles X of France; daughter of Ferdinand I, of the Two Sicilies: b. 5 Nov. 1798: d. 17 April 1870. Her futile attempt at insurrection in 1832, to place her son on the French throne, caused her imprisonment and subsequent withdrawal to Sicily. That son, called by his partisans Henri V, died without heirs in 1883.

**BERRY, Charles Ferdinand, Duc de,** second son of the Count d'Artois (afterward Charles X) and Maria Theresa of Savoy: b. Versailles, 24 Jan. 1778; d. 14 Feb. 1820. He was educated along with his elder brother, the Duke of Angoulême. In 1792 he fled with his father to Turin, served under him and Condé on the Rhine, and early learned the art of winning the love of the soldiers. Subsequently he lived alternately in London and Scotland, continually occupied with plans for the restoration of the Bourbons. Landing at Cherbourg, 13 April 1814, he passed through the cities of Bayeux, Caen, Rouen, etc., gaining over the soldiers to the cause of the Bourbons, distributing alms, and delivering prisoners. When Napolean landed from Elba, the King committed to Berry the chief command of all the troops in and around Paris. All his efforts to secure their fidelity proving ineffectual, he was obliged to retreat on the night of 19 March, with the troops of the household, to Ghent and Alost, where the King then was. The battle of Waterloo enabled him to return to Paris, where he arrived 8 July, and surrendered his command over the troops of the household into the hands of the King. At the opening of the chambers in Paris he took the oath to maintain the Constitution, and was appointed president of the fourth bureau; but soon retired from public life. He died of a blow inflicted by a political fanatic named Louvel. The Duke left a daughter Louise Marie Thérèse, afterward Duchess of Parma; and a posthumous son, subsequently known as Comte de Chambord.

**BERRY, Hiram George,** American soldier. b. Thomaston, Me., 27 Aug. 1824; d. Chancellorsville, 2 May 1863. He was prominent in local politics, holding office as representative in the State legislature and as mayor of Rockland. He entered the Union army as colonel of the 4th Maine Infantry and was present at the battle of Bull Run, the siege of Yorktown, took a conspicuous part in the battles of Williamsburg, Fair Oaks, Chantilly and the second Bull Run campaign. President Lincoln nominated him a major-general of volunteers, January 1863, and he succeeded General Sickles in command of the 2d division of the 3d army corps. At a critical point in the battle of Chancellorsville, 1 May 1863, Hooker ordered General Berry to charge with the bayonet the advancing enemy. He did so, and for three hours his division, almost alone, withstood the enemy's assault and regained for the Federal forces a portion of their lost ground. He was killed at the head of a successful bayonet charge upon the renewal of the battle the following day.

**BERRY, Joseph Flintoft,** Methodist bishop: b. Canada 1856. Ordained 1874, elected bishop 1904; editor *Michigan Christian Advocate* 1884–90; of *Epworth Herald* 1890–1904.

**BERRY, Mary,** English author: b. Kirkbridge, Yorkshire, 16 March 1763; d. London, 20 Nov. 1852. She and her sister Agnes were intimate friends of Horace Walpole, who in his letters spoke of them in terms of the strongest affection. For their amusement he wrote 'Reminiscences of the Courts of Georges I and II' (1789). He established the sisters at Teddington in 1789. In his will he bequeathed $4,000 to each and to both the house and property at Little Strawberry Hill, where they had made their home after 1791. In 1798 Mary edited the 'Works of Horace Walpole.' Her most ambitious work was her 'Social Life in England and France' (1844).

**BERRY, Richard James Arthur,** Anglo-Australian author and educationalist: b. Lancaster, England, 30 May 1867. He was educated at the University of Edinburgh, where he was Gunning Victorian prize man in 1894; graduated in medicine and became lecturer on anatomy in the School of Medicine of the Royal College of Edinburgh (1894–1906); examiner in anatomy in the University of Saint Andrew (1898–1901), in the University of Aberdeen (1901–05) and in the Royal College of Surgeons (1896–1905). In the latter year he became professor of anatomy in the University of Melbourne. He at once thoroughly identified himself with the life and interests of Australia. Among his published works, which are all of a scientific nature, are 'The Colcal Folds and Fossæ' (1897); 'Regional Anatomy' (1900); 'Surface Anatomy' (1906); and 'A Clinical Atlas of Sectional and Topographical Anatomy.'

**BERRY,** or **BERRI,** a former province and dukedom of France, of which Bourges was the capital. With the exception of the arrondissement Saint Amand, which belonged to the Bourbonnais, it now forms the departments Indre and Cher. In ancient times it formed part of the Roman province of Aquitania and passed under the domination of the Franks in the 6th century. Later it enjoyed its independence under a line of hereditary counts. In 1360 it was made a duchy and in 1601 annexed by the French Crown. It gave title at various times to French princes, the younger son of

Charles X being the last to hold them. George Sand, in her 'Légendes Rustiques' and others of her later novels, gives very good pictures of the country and life of Berry.

**BERRY, Canal de,** one of the important canals in France. It begins at Montluçon on the Cher, the chief trading centre of the coal fields of the Allier; descends the Cher valley to Saint Amand, and ultimately enters the Cher itself near Saint Aignan, below which point the canalized Cher continues the line of navigation to Tours. Length of navigation 200 miles, of which 36½ miles belong to the canalized Cher. Constructed 1807–41.

**BERRYER,** bar-yā, **Antoine Pierre,** French advocate and orator: b. Paris, 4 Jan. 1790; d. 29 Nov. 1868. In 1814 he proclaimed at Rennes the deposition of Napoleon and remained till his death an avowed Legitimist of liberal principles. He assisted his father in the defense of Ney, secured the acquittal of General Cambronne and defended Lamennais from a charge of atheism. His eloquence was compared with that of Mirabeau, and after the dethronement of Charles X (1830) he remained in the Chamber as the sole Legitimist orator. In 1840 he was one of the counsel for the defense of Louis Napoleon after the Boulogne fiasco. In 1843 he did homage to the Comte de Chambord in London, adhering to him through the revolution of 1848 and voting for the deposition of the prince-president the morning after the *coup d'état* of 1851. He gained additional reputation in 1858 by his defense of Montalembert, and was counsel for the Patterson-Bonapartes in the suit for the recognition of the Baltimore marriage. In 1863 he was re-elected to the Chamber with Thiers. He was elected to the Academy in 1854.

**BERSAGLIERI,** bĕr-są-lyā'rę, a corps of riflemen or sharpshooters, introduced into the Sardinian army by General Della Marmora about 1849. They took part in the Crimean War and assisted at the battle of the Tchernaya, 16 Aug. 1855. They were likewise employed in the Italian wars of 1859 and 1866. They wear cocks' feathers in their hats. They are not big men but are noted for their marching powers and endurance. They regularly march at four miles an hour, with a step of 34 inches. The 11th Bersaglieri in the Tripolitan campaign made two wonderful desert marches — one of 50 miles in 26 hours and one of 33 miles in 17 hours. At the entry of Italy into the Great War in 1915 there were 12 regiments of Bersaglieri in the regular army, with about 3,000 men in each, and 20 battalions in the mobile militia, with 1,000 men to the battalion.

**BERSERKER,** a descendant of the eight-handed starkader and the beautiful Alfhilde and, according to the Scandinavian mythology, a famous warrior. He disdained the protection of armor, whence he received his name, which signifies, according to Vigfusson and Fritzner and 'The Oxford English Dictionary' (Oxford 1888), probably "bear-sack," that is, "bear-coat." He raged like a madman in battle. He killed King Swafurlam and married his daughter, by whom he had 12 sons as untamable as himself. They were also called Berserker, and after their time the name was given to wild and fierce Scandinavian warriors.

**BERSEZIO,** ber-sets'yō, **Vittorio,** Italian novelist and playright: b. Peveragno, Piedmont, 1830; d. 1900. He was long active as an editor and was a voluminous writer of fiction, drama and works of history. Both as a writer of tales and of comedies he is conspicuous for vivid and faithful delineation of Piedmontese life, especially in his dialect comedies, among which 'The Misfortunes of Monssù Travett' is considered to be his masterpiece. He also wrote an excellent historical work, 'The Reign of Victor Emmanuel II' (1878–93). Consult Orsi, D., 'Piedmontese Dialect and the Theatre' (1890).

**BERSIER,** bār-syā, **Eugène Arthur François,** a French Protestant pulpit orator of note: b. Morges, near Geneva, 1831; d. Paris, 19 Nov. 1889. He became in 1855 a preacher in Paris, where he was much admired and his sermons were translated into several languages. Among his writings are 'Coligny avant les guerres de religion' (1884); 'Histoire d'une petite fille heureuse' (1890); in English, 'Sermons' (London 1881–1901). Consult Tinling, J. F. B., 'Bersier's Pulpit: An Analysis of the Published Sermons of Pastor Eugène Bersier' (1901).

**BERTHEAU,** bĕr-tō', **Ernst,** German theologian and orientalist: b. Hamburg 1812; d. Göttingen 1888. Most of his active life as professor of Oriental languages and Scripture exegesis was spent at Göttingen. His fame rests mainly upon his theological works, of which the more important are: 'The Seven groups of Mosaic Laws' (1840); 'History of the Israelites' (1842); 'Exegetic Handbook to the Old Testament' (1845); 'Commentaries on the Books of Judges and Ruth'; 'Proverbs of Solomon'; 'Books of the Chronicles,' and a 'Syriac Grammar.'

**BERTHELOT,** bār-tlō, **Pierre Eugène Marcellin,** French chemist and politician: b. Paris, 25 Oct. 1827; d. there, 18 March 1907. He early studied chemistry, and was brought into notice in 1854 by his thesis for a doctor's degree, in which he gave an account of his artificial reproduction of natural fats. In 1859 he was appointed professor of organic chemistry in the Superior School of Pharmacy; and in 1865 a new chair of organic chemistry was organized for him in the College of France. In 1870 he was elected president of the scientific committee of defense, and during the siege of Paris was entrusted with the manufacture of ammunition and guns, and especially dynamite and nitro-glycerine. In 1873 he became a member of the Institute, and in 1878 he became president of the committee on explosives, which introduced smokeless powder. His labors also led to the discovery of dyes extracted from coal tar. He received the decoration of the Legion of Honor in 1861; was made commander in 1879, and grand officer in 1886. In 1889 he was elected permanent secretary of the Academy of Sciences. He contributed to the knowledge of synthetical processes and to the relations between the phenomena of heat and of chemistry, and may be regarded as the founder of synthetic chemistry and thermochemistry. In public life he held a prominent place, became in 1876 inspector-general of education, in 1881 a life member of the Senate,

in 1886–87 was minister of public instruction and in 1895–96 foreign secretary. His works include 'Chimie organique fondée sur la synthèse' (1860); 'Leçons sur les principes sucrés' (1862); Leçons sur l'isomérie' (1865); 'Traité élémentaire de chimie organique' and 'Sur la force de la poudre et des matières explosives' (1872 and 1889); Essai de mécanique chimique' (1879); 'Les origines de l'alchimie' (1885); 'Collection des anciens alchimistes grecs' (1888); 'Chimie des anciens' (1889); 'Traité pratique de calorimétrie chimique' (1893); 'Recherches experimentales' (1901).

**BERTHIER**, bār-tyā, **Louis Alexandre**, marshal of France, Prince and Duke of Neuchâtel and Valengin, Prince of Wagram: b. Versailles, 20 Nov. 1753; d. Bamberg, 1 June 1815. In the American war of independence he served under Lafayette. In the early days of the Revolution, he aided in the escape of some members of the royal family. He served with distinction in Vendéan War, 1793–95. In 1795 was appointed chief of the staff to Kellermann, and by causing the French army to take up the lines of Borghetto, contributed to arrest the advance of the enemy. In October 1797 Bonaparte sent him to Paris to deliver to the directory the treaty of Campo-Formio. In 1798 he received the chief command of the army of Italy, and in the beginning of February made his entrance into Rome, abolished the papal government, and established a consular one. In 1799 he was appointed Minister of War. He afterward became General-in-Chief of the army of reserve, accompanied Bonaparte to Italy in 1800, and contributed to the passage of Saint Bernard and the victory of Marengo. He signed the armistice of Alessandria, formed the provisional government of Piedmont, and went on an extraordinary mission to Spain. He accompanied Napoleon to Milan, June 1805, to be present at his coronation, and in October was appointed chief of the general staff of the grand army in Germany. He distinguished himself at Austerlitz and Jena, and for his services after the battle of Wagram (1809) he was given the title of Prince of Wagram. In 1810, as proxy of Napoleon, he received the hand of Maria Louisa, daughter of the Emperor Francis I, and accompanied her to France. Somewhat later Napoleon made him colonel-général of the Swiss troops. In 1812 he was with the army in Russia as chief of the general staff, which post he also held in 1813. After Napoleon's abdication he lost his principality of Neuchâtel, but retained his other honors, and possessed the favor and confidence of Louis XVIII. Subsequently he retired to Bavaria, where, in a fit of insanity, he committed suicide. His memoirs were published in 1826.

**BERTHOLD VON REGENSBURG**, bĕr'tōlt fŏn rā'gĕns-boorg, German Franciscan preacher: b. about 1210; d. 13 Dec. 1272, and buried in the Franciscan convent at Ratisbon, of which he was a member. From 1250 to the close of his life, he preached to immense congregations in Switzerland, Hungary, Austria, Moravia, Bohemia, Saxony, Swabia, etc., generally in the open air, as the churches were not large enough to hold the audiences. In the Heidelberg University library some MSS. of his sermons are preserved. Near Glatz, in Silesia, a tent under which he had preached was exhibited long after his death, and revived the feelings of affection and reverence in which his name is held by the people. His sermons are models of homely and affecting pulpit eloquence. Consult 'Biography by Unkel' (Cologne 1882).

**BERTHOLET, Alfred**, Swiss theologian: b. Basel 1868. He was educated at Basel, Strassburg and Berlin. In 1904 he was chosen secretary of the Second International History of Religious Congress at Basel. He has published 'Die Stellung der Israeliten und der Juden zu den Fremden' (1896); 'Kommentare zu Leviticus, Deuteronomium, Hesekiel, Ruth, Esra, und Nehemia' (1897–1902); 'Die Gefilde der Seligen' (1903); 'Seelenwanderung' (1904); 'Daniel und die Grieche Gefahr' (1907); 'Aesthetische und Christenliche Lebensauffassung' (1910); 'Die judäische Religion von dem Zeit Esras bis zu Zeitalter Christi' (1911).

**BERTHOLLET**, bār-tō-lā, **Claude Louis**, COUNT, French chemist of distinction: b. Talloire, Savoy, 9 Dec. 1748; d. Paris, 7 Nov. 1822. He studied medicine at Turin; went to Paris, where he became connected with Lavoisier, was admitted in 1780 a member of the Academy of Sciences in that city; was made in 1794 professor in the normal school there, and was sent to Italy in 1796, in order to select the plunder that was to be carried to Paris. He followed Bonaparte to Egypt, and returned with him in 1799. After the 18th Brumaire he was made a member of the *senat-conservateur;* afterward count and grand-officer of the Legion of Honor. In 1804 Napoleon appointed him Senator for the district of Montpellier. In 1813 he received the grand cross of the Order of the Réunion. He voted, however, for the establishment of a provisional government and the dethronement of Napoleon. Louis XVIII made him a peer; but Napoleon passed him by in 1815. After the restoration of Louis, he took his seat again in the chamber of peers. Among the inventions and new processes with which the sciences and the arts were enriched by him, the most important are those for the charring of vessels to preserve water in ships, for the stiffening and glazing of linen, for the artificial production of nitre, etc., but principally that for the bleaching of vegetable substances by means of chlorine, which, since 1786, has been in general use in France. Besides different essays in the collections of the Academy and the Institute, he wrote several larger works, among which his 'Essai de Statique Chimique' (1803; translated into English, German and Italian) must be considered as the most important. The complicated phenomena of chemistry were here treated as under the strict and simple laws of mechanics. He had also a large share in the reformation of the chemical nomenclature, as well as in the publication of the work that appeared on this subject in Paris, 1787 — 'Méthode de Nomenclature Chimique.' Consult Cuvier, 'Eloge de Claude Louis Berthollet' (Paris 1826).

**BERTHOLLETIA**, bĕr-thŏl-lē'shĭ-ą, the generic name of Brazil nut (q.v.).

**BERTHOUD**, bär-too, **Ferdinand**, Swiss mechanician, celebrated for his marine chronometers: b. Plancemont, Neuchâtel, 19 March 1727; d. 20 June 1807. His father caused him to be instructed in the art of watchmaking, and, to afford him an opportunity of perfecting his knowledge, sent him to Paris. He resided in this city from 1745, and there made his first marine chronometers, which have been used by French navigators on so many occasions for extending and correcting geographical knowledge. He left several works relating to his art. His nephew, Louis Berthoud, his pupil and the heir of his talents, extended his improvements still further. His chronometers came to be very widely used by French navigators, and were even more convenient than those of his uncle.

**BERTIE, Willoughby**, fourth Earl of Abingdon, English politician: b. 16 Jan. 1740; d. 26 Sept. 1799. He was a vigorous opponent in the House of Lords of the policy of England toward the American colonies that culminated in the Revolution; wrote a famous and very popular tract called 'Thoughts on Mr. Burke's Letter on the Affairs of America,' was active in promoting favorable legislation for Ireland, and sympathized with the French Revolution.

**BERTIER**, bär-tyā, **Francisque Edouard**, French painter: b. Paris, 1841. He was a pupil of Cabanel, and among his many portraits of notables are those of De Lesseps, Grand Duchess Olga, Countess of Warwick, Prince of Wales and Max O'Rell. He has several times visited the United States in order to paint the portraits of prominent Americans.

**BERTILLON**, bär-tę-yôṅ, **Alphonse**, French anthropologist: b. Paris 1853; d. there, 13 Feb. 1914. He is widely noted as the founder of a system of identification of criminals. In 1880, while chief of the bureau of identification in the prefecture of police, he established his system of measurements which has given results marvelous for their precision. The system has since been adopted by the police authorities of the large cities of Europe and the United States. The French method of "reconstructing" a crime by photography and "rehearsing" it in the way it was probably perpetrated, is also his invention, though the idea was no doubt borrowed from Gaboriau. He was one of the expert witnesses in handwriting in the trial of Captain Dreyfus in 1899, and soon after its close was removed from office. He is author of numerous works bearing upon his system, including 'Identification anthropométrique' (1893); 'La comparison des écritures et l'identification graphique' (1897); 'Anthropologie métrique et photographique' (1909). See BERTILLON SYSTEM.

**BERTILLON SYSTEM**, a scientific method of identifying suspected male criminals, invented March 1879, and set forth in 1885 by Dr. Alphonse Bertillon of Paris. As now in use it is not a single system, but a combination of the one invented by himself with two others approved by use. It rests on three principles: (1) Simple and exact measurement of certain parts of the body in a living subject; (2) extreme diversity of the relative dimensions in different subjects, no two correlations ever closely approximating each other; (3) almost absolute fixity of the male skeleton after 20. The measurements are taken with calipers and include: Height, standing and sitting, reach of outstretched arms; length and width of head; length and width of right ear; and length of left foot, forearm, middle and little fingers. The descriptive elements are color of eyes (the most important detail of all, as it never changes and is impossible to disguise), hair, beard and complexion; deformities and peculiarities of shape; marks on body, as moles, scars, the tattooings frequent among criminals, etc., carefully located — as "mole six centimetres to left of fifth vertebra," or "horizontal scar on back of second phalanx of right forefinger, three millimetres below middle." A photograph of full face and one of profile are taken when thought desirable, from a fixed chair and a fixer camera. The entire process, by a measurer and a secretary who writes from dictation, takes five to seven minutes, and the measurements are planned to be accurate within one thirty-second of an inch. Descriptions and photograph are put together on cards of uniform size. The cards are divided into three equal sections according to length of head: short heads, of 187 millimetres and less; medium 187 to 194; long, 194 and above. Experience proves that these divide very closely into nearly equal numbers; and their cards are placed in three tiers of drawers, the short heads uppermost. Each of these is subdivided into three sections according to width of head, without further reference to length; each of these into three sections, according to length of middle finger; each of these into three sections, by length of foot; these are subdivided successively by length of forearm, full height, length of little finger, and color of eyes. These last groups contain from 12 to 14 individual cards, and are classed by length of ear. Thus any new measurement can be compared with its duplicate in this enormous mass, or the absence of such record shown, with marvelous celerity and almost infallible accuracy. Its index value alone is of the first order. Under the old systems, the entire mass of descriptions and photographs had to be searched and compared with any given arrested person, and with the immense number accumulating in great cities it became physically impossible to proceed with any certainty. The system was for some years also of great value in distinguishing new criminals from old offenders: it not merely registered identity, but the fact of a first offense.

In European cities the Bertillon system has been almost entirely superseded by the finger-print system. The great weakness of the former was that the element of personality affected the measurements upon which the identifications depended, hardly any two measurers getting exactly the same dimensions from the same subject. The delicate instruments used were often injured so that they gave incorrect readings. Moreover, the system absolutely failed as to women and children, whose physical dimensions are subject to constant change. On the other hand, the finger-print records are made without any intervening agency, are as readily classified and indexed as the Bertillon cards, and retain their distinctive characteristics from childhood to old age, re-

gardless of sex. (See FINGER-PRINTING). Consult Bertillon, A., 'Identification Anthropométrique' (Paris 1893); Boies, 'Science of Penology' (1901); McClaughry, R. W., 'The Bertillon System of Identification' (Chicago 1896).

**BERTIN,** bār-tăñ, **Antoine,** French poet: b. Isle of Bourbon, 1752; d. San Domingo, 1790. He was much admired by his contemporaries, who, somewhat extravagantly, styled him the French Propertius. He was a friend of Parny, and like him excelled in elegiac and epistolary verse. His principal works are 'Voyage in Burgundy' (1777); and 'The Loves' (1780).

**BERTIN, Louis François** (called BERTIN L'AÎNÉ), French journalist: b. Paris 14 Dec. 1766; d. 13 Sept. 1841. The Revolution made him a journalist, and in 1799 he started the famous *Journal des Débats.* His royalist principles offended Napoleon, and cost him imprisonment and banishment to Elba; thence, however, he escaped to Rome, where he formed a friendship with Châteaubriand. In 1805 he returned to Paris, and resumed the editorship of the *Débats,* but was much hampered by Napoleon placing it under police supervision and causing it to be styled 'Journal de l'Empire.' The second restoration of the Bourbons restored once more to Bertin the free control of his journal, and henceforward he gave almost constant support to the ministerial party. He supported the July monarchy, and edited the *Débats* till his death.

**BERTIN, Louise Angelique,** French musician and composer. b. Les Roches, near Bièvres, 15 Feb. 1805; d. Paris, 26 April 1877. She was a daughter of L. F. Bertin (q.v.), and composed 'Guy Mannering' (1827), 'Faust' (1831), 'Esmeralda' (1836), and other operas. She published volumes of verse, 'Les Glanes' (1842) and 'Nouvelles Glanes' (1876).

**BERTIN, Nicolas,** French artist: b. Paris, 1668; d. 1736. His picture, 'The Building of the Ark,' obtained the grand prize, in 1685, and 'Prometheus Liberated by Hercules' brought him, in 1703, membership in the Academy, where he became professor in 1715. His paintings will be found in the galleries of Dresden, Stockholm, Saint Petersburg, Antwerp, Amsterdam, Orleans and Toulouse.

**BERTINI, Giuseppe,** bĕr-tē'nę, Italian historical painter: b. Milan, 1825; d. 1898. The Milan Academy awarded him the prize for the best historical picture in 1845, and his painting on glass of 'Dante and the Divine Comedy,' exhibited in London in 1853, has been greatly admired. He became professor of painting at the Academy in 1860. Among notable pictures by him are: 'The Vision of Saint Francis of Assisi'; 'Death of Saint Joseph'; 'Tasso Introduced to the Duke of Ferrara.'

**BERTRAND, Henri Gratien,** bārträn, ŏnrę gra-tyān, COUNT, French military officer: b. Châteauroux, 1773; d. there, 31 Jan. 1844. He accompanied Napoleon's expedition to Egypt, distinguished himself at Austerlitz and became his adjutant; and, after the battle of Aspern, in 1809 for his share in saving the French army by bridges, was created count and governor of Illyria. After serving with credit in the subsequent campaigns, and saving the French army after the battle of Leipzig, he retired with the Emperor to Elba, was his confidant in carrying out his return to France, and finally shared his banishment to Saint Helena. On Napoleon's death, Bertrand returned to France, where, though sentence of death had been pronounced upon him, a sentence which Louis XVIII had wisely recalled, he was restored to all his dignities, and, in 1830, appointed commandant of the Polytechnic School. In 1840, he formed part of the expedition which brought back the remains of Napoleon to France.

**BERTRAND, James,** French historical painter: b. Lyons, 1825; d. 1887. He studied in Rome, and his 'Saint Benedict taking Communion,' exhibited at the Salon in 1859, was highly approved. He worked in the classical style, and his paintings are as notable for their careful finish as for their religious tone. They have been frequently engraved. Among them are 'Death of Virginia' (1869); 'Charlotte Corday's Last Day' (1883); 'Calvary' (1884).

**BERTRAND, Joseph Louis François,** bār-trän, jō-sĕf loo-ę frŏñ-swă, French mathematician: b. Paris, 1822; d. 1900. He taught at the Polytechnic and Normal schools, and the Collège de France, and in 1884 became a member of the French Academy. He wrote treatises on arithmetic, algebra, calculus, thermodynamics, and probabilities, and in 1881 was appointed commander of the Legion of Honor.

**BERTUCH, Friedrich Justin,** German translator, publisher and author: b. Weimar, 30 Sept. 1747: d. there, 3 April 1822. He studied at Jena, first theology, then law, graduating in 1769, then became private tutor in Altenburg, during which period he made a thorough study of Spanish literature. In 1775 he became cabinet-secretary at Weimar and Councillor of Legation in 1785. He, Wieland and Schültz founded the *Jenaische allgemeine Litteraturzeitung,* to which he was a very frequent contributor. He was also an editor of the *Journal des Luxus und der Moden.* One of his most popular works was a compilation for children, 'Bilderbuch für Kinder' (12 vols., 1790–1822). But it was as a publisher of maps and geographical works that he attained a world-wide reputation. Consult Feldmann, 'F. J. Bertuch' (Saarbrücker 1902).

**BERULLE,** bā-rül, **Pierre de,** French cardinal: b. near Troyes, 4 Feb. 1575; d. Paris, 2 Oct. 1629. He early showed remarkable mental acuteness and knowledge, and became distinguished for skill in controversy. He instituted, and was the first superior of, the order of Carmelites in France, and also founded the congregation of the Oratory notwithstanding the opposition of the Jesuits. He was statesman as well as priest, as Ambassador to Spain negotiated the treaty of Monçon (1626), and was for a time secretary of state. He was often opposed to Richelieu, whose jealously he excited, and who could not conceal his satisfaction at the news of his death. He accompanied the Princess Henrietta to England, on her marriage with the Prince of Wales. He shunned elevated positions, and was very unwillingly obliged to accept the hat of a cardinal.

This elevation made no difference, however, in his humble way of life, and did not prevent him from taking part, as he had always done, in the servile work of the religious community to which he belonged. He was also a man of letters, and was the first to appreciate and encourage the genius of Descartes, urging him, by his sense of obligation to his Creator, to make known to the world his discoveries. The most noted of his writings is 'Les grandeurs de Jésus.'

**BERVIC**, bār-vēk, **Charles Clément**, French engraver: b. Paris, 1756; d. 1822. The works of Bervic are among the best of the French school, but are not numerous. The most celebrated of them is the full length figure of Louis XVI, after a picture of Callet. The copies are very rare and dear, because the plate was broken to pieces in the revolutionary tumults of 1793. The exactness of his drawing, the firmness and brilliancy of his touch, the purity and correctness of his design, and the happiness with which he transferred to his plate the beauties of the original, gave a high character to his productions.

**BERWICK, James Fitz-James,** DUKE OF French marshal: b. Moulins, 1670; d. 1734. He was the natural son of the Duke of York, afterward King James II, and Arabella Churchill, sister of the Duke of Marlborough; and first went by the name of Fitz-James. He received his education in France, and served his first campaigns in Hungary under Charles, Duke of Lorraine, general of Leopold I. He returned to England at the age of 17, and received from his father the title of duke. On the landing of the Prince of Orange in 1688 he went to France with his father, whom he afterward accompanied on the Irish expedition. He took part in the siege of Derry and was wounded at the battle of the Boyne, 1 July 1690. He afterward served in the low countries. In 1705 he suppressed the rising of the Camisards of Languedoc, and was naturalized in France. In 1706 he took Nice, was made marshal of France, and sent to Spain, where he gained the battle of Almanza, which rendered King Philip V again master of Valencia. In 1709 he went to take the command in Dauphiné, and the measures which he took to cover this and the neighboring provinces against the superior forces of the Duke of Savoy gained him a great reputation. In 1718 and 1719 he was obliged to serve against Philip V, who from gratitude to the marshal had taken a son of his into his service. On his entrance into the Spanish dominions he wrote to his son, the Duke of Liria, admonishing him to do his duty to his sovereign. At the siege of Philipsburg, on the Rhine, his life was terminated by a cannon-ball. He had served in 29 campaigns. His memoirs were published in French in 1778 and have gone through English editions. Consult Wilson, 'Duke of Berwick, Marshal of France' (1883).

**BERWICK-ON-TWEED**, England, seaport town, once forming a county of itself, but now incorporated in Northumberland, on the north or Scottish side of the Tweed, within half a mile of its mouth. It is surrounded by a complete series of ramparts, which are well preserved, and along which is an agreeable promenade. The ramparts are in the main of Elizabethan construction, with parts dating from Edward I. The streets are for the most part narrow, steep, straggling and irregular, though some of the principal ones are wide and open. The Tweed is crossed at the town by an old bridge of 15 arches, 1,164 feet long and only 17 wide, and by a magnificent railway viaduct of stone, 667 yards long and 184 feet in extreme height with 28 semicircular arches built by Robert Stephenson in 1850. The chief industries are iron-founding, the manufacture of engines and boilers, agricultural implements, feeding-cake, manures of various kinds, ropes, twine, etc. The chief exports are grain, artificial manures, and herrings. A dock affording accommodation for large vessels was opened in 1876, but its shipping remains unimportant. In the beginning of the 12th century, during the reign of Alexander I, Berwick was part of his realm of Scotland, and the capital of the district called Lothian. Soon after this date it became populous and wealthy, was the chief seaport of Scotland, contained a strong castle, churches, hospitals and monastic buildings, and was created one of the four royal burghs of Scotland. In 1216 the town and castle were stormed and taken by King John. During the competition between Balliol and the elder Bruce for the Scottish throne the English Parliament sat in Berwick; and in the hall of the castle Edward I pronounced judgment in favor of Balliol. King Robert Bruce retook the town and castle in 1318; but, after undergoing various sieges and vicissitudes, both were surrendered to Edward IV in 1482, and have ever since remained part of the soil of England. From 1482 to 1885 the borough sent two members to the English Parliament, when it was merged in the Berwick division of Northumberland. The borough includes the watering places of Tweedmouth and Spittal, situated on the south bank of the Tweed. Pop. (1911) 13,075.

**BERWICKSHIRE**, Scotland, maritime and border county, nominally divided into the three districts of Lauderdale, Lammermoor, and the Merse or March. The principal rivers of the county are the Tweed, the Leader, the Eye, the Whiteadder and the Blackadder; and all except the last contain salmon, of which great quantities are shipped for London. Vast quantities of agricultural produce are shipped from the ports of Berwick and Eyemouth, and much is also sent to Edinburgh, Dalkeith, Haddington and Dunbar. Very few manufactures are established in this county, the principal one which it supplies beyond domestic consumption being that of paper. The North Sea fisheries are of great importance. Berwick formerly abounded in strong castles and fortified places mainly on the high and rocky coast. The ruins of Fast Castle, the 'Wolf's Crag' of Scott's 'Bride of Lammermoor,' stand on a precipitous headland four miles northwest of Coldingham. In the Tweed Valley the land is highly cultivated; otherwise the county is mainly pastoral. The county town is Greenlaw. Other small towns are Duns and Eyemouth. The county has an area of 292,535 acres; its population (1911) was 29,643; and it returns one member to Parliament.

**BERYL**, a native silicate of aluminum and the rare metallic element glucinum (or "beryllium"), having the formula $3GlO.Al_2O_3.6SiO_2$, and crystallizing in the hexagonal system. It

commonly has a specific gravity of 2.70, and a hardness of from 7.5 to 8. A portion of the glucinum is sometimes replaced by lithium, sodium or cæsium, and chemically combined water is also occasionally present. In the latter case the formula of the mineral appears to be $H_2Gl_6Al_4Si_{12}O_{36}$. Beryl is usually transparent or translucent, and in color may be green, blue, yellow, white, or light red. A variety which is transparent, and bright green from the presence of oxide of chromium, is known as "emerald," and is highly esteemed as a gem (see GEMS); the "Oriental emerald" (see SAPPHIRE), however, is not a variety of beryl, but a green variety of sapphire. A bluish-green variety of the common beryl, known as "aquamarine," is also used as a gem. Beryl occurs in all parts of the world, being commonly associated with granite. Its crystals are sometimes enormous in size, and two speciments from Grafton, N. H., are known, which weigh 2,900 pounds and 2½ tons, respectively. The finest emeralds (q.v.) are from Bogota; aquamarines (q.v.), from Siberia, Brazil, Maine, North Carolina and Colorado; golden beryls, from Connecticut and North Carolina.

**BERYLLIUM,** a rare metallic element, called "beryllium" from the fact that it was first found in the beryl. Its salts have a sweetish taste, and from this circumstance the element itself has received the name glucinum (q.v.).

**BERYTUS, School of,** a famous Greek Law school which existed in the 3d century A.D. and probably for some time previous. When Justinian closed the schools of philosophy and law at Athens, in 529, he confined the study of jurisprudence in the East to Constantinople and Berytus. He reorganized the course of study, making his new codification the basis of the curriculum, to be pursued in its logical sequence for five years. Berytus was destroyed by earthquake in 554.

**BERYX,** bĕr'ĭks, the designation of a genus of deep-sea fishes in tropical waters belonging to the division *Perciformes* of the *Acanthopterygii* and the family *Berycidæ. B. splendens,* deep red with bright streaks, is one of the most beautiful of the Cuban fishes.

**BERZELIUS,** ber-tsā'lĭ-ŭs, **Jöns Jakob** BARON, Swedish chemist of distinction: b. Westerlösa, East Gothland, Sweden, 29 Aug. 1779; d. Stockholm, 7 Aug. 1848. The first fruit of his studies and of a year's residence as assistant to a physician at the famous watering-place of Medewi, was the 'Nova Analysis Aquarum Medeviensium' (1800). After taking his doctor's degree, he was appointed by the board of health in 1802 adjunct of medicine and pharmacy in Stockholm. In 1807 he became professor of medicine and pharmacy in Stockholm. In 1808 he was admitted a member of the Academy of Sciences at Stockholm, in 1810 one of its directors, and in 1818 its perpetual secretary. In 1818 the King, while allowing him to retain his own name, made him a noble; and in 1835, on the occasion of his marriage with a daughter of Poppius, a councillor of state, he was named a baron.

The existing state of chemistry is founded in a great measure on the discoveries and views of Berzelius, though, by the rapid development of the science, the edifice which he erected has undergone many alterations, notable defects have been discovered in it. Hence his views in regard to atomic weights, his electrochemical theory, and his mode of procedure in organic chemistry, have met with many opponents. He discovered selenium and thorium, first exhibited calcium, barium, strontium, tantalum, silicium and zirconium in the elemental state, and investigated whole classes of compounds, as those of fluoric acid, the metals in the ores of platinum, tantalum, molybdenum, vanadium, sulphur salts, etc. He introduced a new, or at least a wholly altered nomenclature and classification of chemical compounds. In short, there is no branch of chemistry to which he did not render essential service; and his labors were so numerous that, when the accuracy with which they have been executed is kept in view, it becomes almost incomprehensible how one man should have been able to perform them. It ought to be especially mentioned that he never rested satisfied with the bare investigation of isolated facts, but always extended his investigations over a wide field, so as to contribute to the advancement of chemistry as a whole. In addition to his numerous communications to the journals and periodicals of the period, may be mentioned, among his separate works, his 'View of the Composition of Animal Fluids,' 'New System of Mineralogy,' 'Essay on the Theory of Chemical Proportions,' and above all his 'Text-book of Chemistry,' which has been translated into most European languages. As secretary of the Academy of Sciences, he published an annual account of the progress of chemistry and mineralogy, which, having been continued during 27 years, extends to as many volumes. Consult Söderbaum, 'Berzelius, Werden und Wachsen' (Leipzig 1899).

**BERZSÉNYI,** bĕr'zhā-nyi, **Daniel,** Hungarian poet: b. Heyte, 1776; d. 1836. An authorized version of his 'Versei' appeared in 1813 and in 1816 was reprinted with his consent and speedily became classic in Hungarian literature. The poems received a hearty acclaim from the younger patriots. The best edition is that by Toldy (2 vols., Pesth 1864).

**BES,** an Egyptian god, represented clad in a lion's skin, with the head and skull of the animal concealing his features, and with a dwarfish and altogether grotesque appearance. He was supposed to preside over art, music, the dance and childbirth. He was formerly identified with Typhon. He was of foreign origin and appears chiefly after 1500 B.C.

**BESANÇON,** bĕ-zăṅ-sôṅ, France, fortified town, capital of the department of Doubs, 206 miles southeast of Paris. The town is surrounded by hills, covered with vineyards. The isthmus or peninsula on which it is built is composed of a mass of rocks crowned by the citadel, which commands the country toward the north, but the citadel itself is commanded by several eminences, on which forts have been erected for the purpose of securing the approaches. Besançon is one of the strongest towns in France, and also one of the best built. The streets are spacious and well laid out, and the squares are adorned with fountains. The citadel is one of Vauban's finest works. There are here a theatre, a large and valuable public

library, containing over 130,000 volumes, a museum, a botanic garden, school of artillery, lyceum, etc. The trade and manufactures are extensive. The latter comprise linen, cotton, woolen and silk goods, ironmongery, etc.; but the principal industry is watch- and clock-making. It employs about 12,000 work people. There are also extensive foundries, breweries, sawmills and tanneries. Besançon is the ancient Vesontio, Besontium, or Bisontium, which is mentioned by Julius Cæsar, who drove the Sequani from it in 58 B.C., as a place of great natural strength. Several of the streets and places still bear their old Roman names, and there are numerous Roman remains, especially a triumphal arch of the Emperor Marcus Aurelius, an aqueduct, an amphitheatre and a large theatre. Pop. (1911) 57,978.

**BESANT**, bĕs-ănt, **Annie**, English theosophist and author: b. London, 1 Oct. 1847. She was married in 1867 to the Rev. Frank Besant, brother of Sir Walter Besant, but was legally separated from him in 1873. She early manifested an earnest interest in social and political topics, and in 1874 became connected with the National Secular Society. Owing to the publication of 'Fruits of Philosophy,' Mrs. Besant was prosecuted, in conjunction with Charles Bradlaugh (June 1877), but the prosecution failed. Mrs. Besant has since stated her disagreement with the sentiments expressed in this book. In 1883 she announced her adhesion to Socialism. For three years she was a member of the school board of London. She was prominently connected with various socialistic movements and a frequent speaker at meetings for workingmen. In 1899 she underwent a complete change of mind when she joined the Theosophical Society, and in 1907 she was elected president. She visited the United States in 1891 and 1892–93 and lectured on Madam Blavatsky and reincarnation and on theosophy and occultism. Among her numerous publications are 'Reincarnation'; 'Seven Principles of Man'; 'Autobiography'; 'Death and After'; 'Building of the Kosmos'; 'In the Outer Court'; 'Karma'; 'The Self and Its Sheaths'; 'Path of Discipleship'; 'Man and His Bodies'; 'Four Great Religions'; 'The Ancient Wisdom'; 'Three Paths to Union with God'; 'Evolution of Life and Form'; 'Dharma'; 'Avataras'; 'Ancient Ideals in Modern Life'; 'Esoteric Christianity'; 'Thought-Power'; 'The Religious Problem in India'; 'Theosophy and the New Psychology'; 'The Wisdom of the Upanishats.' In July 1916 she was refused admission into India by the British authorities.

**BESANT**, bĕ-zănt', **Sir Walter**, English novelist: b. Portsmouth, England, 14 Aug. 1836; d. London, 9 June 1901. He was educated in London and at Christ's College, Cambridge, where he graduated with mathematical honors. He was for a time professor in the Royal College, Mauritius. His first work, 'Studies in Early French Poetry,' appeared in 1868, and to the field of French literature also belong his 'French Humorists' (1873), and his 'Rabelais' (1877 for the Foreign Classics series). He was for years secretary to the Palestine Exploration Fund, and published a 'History of Jerusalem' (1871) in conjunction with Professor Palmer, the life of whom he also wrote. The 'Survey of Western Palestine' was edited by him. He is best known by his novels, a number of which were written in partnership with James Rice, including 'Ready-Money Mortiboy' (1872); 'This Son of Vulcan'; 'The Case of Mr. Lucraft'; 'The Golden Butterfly' (1876); 'The Monks of Thelema,' etc. After Mr. Rice's death (1882) Sir Walter wrote: 'All Sorts and Conditions of Men' (1882), which led to the establishment of the People's Palace in London; 'All in a Garden Fair' (1883); 'Dorothy Foster' (1884), which in his own estimation was his best work; 'The World Went Very Well Then' (1887); 'The Ivory Gate' (1892); 'The Rebel Queen' (1893); 'Beyond the Dreams of Avarice' (1895); 'The Orange Girl' (1899); 'The Alabaster Box' (1900); 'The Story of King Alfred' (1901), etc. Among his other works are 'The Eulogy of Richard Jefferies' (1888). He labored for many years to promote the interests of all members of the literary profession, and was editor of the monthly *The Author*. In 1894 he projected a great survey of London, which was intended to bring the history of the city from the earliest times down to the end of the 20th century, and wrote four volumes of preliminary studies with that end in view, but he did not live to complete the undertaking. He was knighted in 1895.

**BESHOW**, the Alaskan pollack. See POLLACK.

**BESIDE THE BONNIE BRIER BUSH**, a novel by Ian Maclaren (the Rev. Dr. John Watson), delineating Scottish character and life among the lowly and published in 1894. It consists of short sketches with no attempt at plot, but interest attaches to the well-drawn characters. It is one of the best examples of what has been styled the "kail-yard" school of fiction, whose principal exponents are Crockett, Barrie and Watson. It was successfully dramatized.

**BESIKA BAY**, an inlet of the Ægean Sea on the northwest coast of Asia Minor, opposite Tenedos, to the south of the entrance of the Dardanelles. The English fleet was stationed here during crises in the Eastern question in 1853–54 and 1877–78. See WAR, EUROPEAN, DARDANELLES CAMPAIGN.

**BESKOW**, bĕs'kŏv, **Bernhard von**, Swedish dramatist: b. Stockholm, 19 April 1796; d. 17 Oct. 1868. He was ennobled in 1826 and appointed marshal of the royal household in 1833. He officiated for some time as director of the royal theatre, and is the author of several excellent tragedies, which were translated into Danish and German by Oehlenschläger, and of which 'Torkel Knutsson' is considered the best acting play of the Swedish stage. He wrote an opera, 'Trubaduren,' for which King Oscar composed the music. His literary reputation was increased by his books of travel, by his poetical works, and by his contributions to the press. The great prize of the academy was awarded in 1824 to his poem 'Sveriges anor.' Other tragedies, which were very popular, are 'Erikden Fjortonde,' and 'Birger och Lans Att.' His poem 'Karl XII' has also been very widely known.

**BESNARD**, **(Paul) Albert**, bā-nar', French painter: b. Paris, 2 June 1849. His

parents were both artists, his father having studied under Ingres. The young Besnard, with such influences, showed an early aptitude for art-study and went into Cabanel's private studio at the age of seventeen. He studied under Brémond as well. His first salon picture was received in 1868. In 1874 he received the Prix de Rome bringing with it the sojourn in Italy at the Villa Medicis. From 1879 to 1881 he practised portrait painting in London. In 1884 he exhibited at the salon his decorations for the École de Pharmacie in Paris which, followed (in 1899) by his 'Femme qui se chauffe' now in the Luxembourg, raised considerable outcry against him in orthodox circles. It was asserted that he, designated by his training to carry on the traditions of the École des Beaux-Arts, was surrendering to the allurements of impressionism. In reality there was little need for the academic group to take alarm, for despite his extreme virtuosity and his learning certain principles from the advanced painters, he remains a school man, though a brilliant one. The idea is corroborated as his work advances, later productions being 'Life Reborn from Death,' at the Sorbonne; 'Truth Attended by the Sciences Enlightening Man,' a ceiling decoration in the Hotel de Ville; 'The Happy Isle,' at the Musée des Arts Decoratifs and the Petit Palais, portraits like the 'Portrait de Femme,' at the Düsseldorf Museum, and genre, like his pictures of India. He has received many honors and is represented in the Brussels Gallery by 'Les Cariatides' and the Luxembourg by the 'View of Algiers,' the 'Portrait of an Engraver' and the 'Femme qui se chauffe,' before mentioned. Besnard is a great traveler and brought from Spain and Algiers admirable specimens of his art; but his greatest undertaking was his journey to India in 1911. He brought back incomparable pictures of the exotic color and the interesting life of that country. They are masterpieces of intense color, often in a single tone; such as his 'Weeping Woman,' painted entirely in red. Other excellent examples are the 'Steps at Benares'; 'Indian Dancing Girl'; 'The Bracelet Merchant.' The exhibition of his Indian works in Paris in 1912 attracted international attention. A large and representative exhibition of his works was held in 1913 in the Boston Museum of Fine Arts and afterward in other American museums. He was engaged in 1914 to execute mural paintings for the Peace Palace at The Hague. He is also a pastellist and engraver of note. Besnard has successfully united the achievements of the impressionists in light and color with whatever is really sublime and permanent in classic tradition; he has resumed the historic mission of French painting to express in form and color the intellectual and spiritual achievements of the nation. A good example of his unconventionality is his portrait of Madame Réjane. Consult Marx 'The Painter Albert Besnard' (Paris 1893), and Mourey, 'Albert Besnard' (ib., 1906), with 100 illustrations and literary contributions by the artist.

**BESSARABIA**, a government in the southwest of Russia, on the borders of Rumania. It extends in a northwesterly direction from the Black Sea, between the Pruth and the Dniester; area, 16,181 square miles. Possession of the territory was stubbornly contested between the Turks and Russians at different times from early in the eighteenth century; in 1812 it was definitely annexed to Russia. A portion at the southeast extremity was given to the principality of Moldavia (now incorporated in the kingdom of Rumania) in 1856, but the greater part of this (3,580 square miles) was restored in 1878. Agriculture is chiefly developed in the north, pasturage is most largely carried on in the south, in the middle portion are extensive forests. It is watered by the Dniester, the Pruth and the Danube. The inhabitants include Russians, Poles, Rumanians, Bulgarians, Germans, Armenians, Jews, etc. The capital is Kishenef. The products are salt, wool, tallow, leather, soap, etc. Pop. 2,490,200.

**BESSARION, Johannes, or Basilius,** Greek monk: b. Trebizond, 1389; d. Ravenna, 19 Nov. 1472. He was titular patriarch of Constantinople, archbishop of Nicæa, afterward cardinal and legate to France, in the time of Louis XI. After having spent 21 years in a monastery of Greece, devoted to theology and literature, he left it to follow the Emperor John Palæologus to Italy, with the intention of being present at the Council of Ferrara, in the hope of uniting the Greek and Latin churches. They were accompanied by many Greeks, distinguished by their talents and dignity. Bessarion seconded with so much zeal the projects of Palæologus that he became odious to the Greek Church, while Pope Eugenius IV rewarded him for his devotion to that of Rome, by the dignity of cardinal-priest. He was sent to France by Sixtus IV to reconcile Louis XI with the Duke of Burgundy and obtain aid against the Turks. He did not succeed, and it is pretended that he received a personal insult from the king, which humiliation some suppose to have been the cause of his death.

**BESSEL, Friedrich Wilhelm,** German astronomer: b. Minden, Prussia, 22 July 1784; d. 17 March 1846. An astronomical tract which he had drawn up brought him into communication with Olbers, who encouraged him in his labors and procured for him the appointment of inspector of astronomical instruments to the University of Göttingen. In 1810 he removed to Königsberg, and in 1812–13 superintended the construction of the observatory of this town. From 1824 to 1833 he completed a series of 75,011 observations on the celestial zone contained between 15° N. and 15° S. declination. These observations included all the stars in the zone as far as the ninth magnitude. A dissertation which he published in 1844 contains important investigations on the variability of the movements of the fixed stars. An important share in the discovery of the new planet Neptune belongs to him, as in a paper read in 1840 he called attention to the existence of a planetary mass beyond Uranus, founding on considerations which were afterward happily proved to be correct. Few contributed as much to the advancement of astronomy in the first half of the 19th century. He was the inventor of 'Bessel's Functions.' His principal works are an 'Essay on the Path Traversed by the Comet of 1807'; 'Astronomical Observations' during various years; 'Determination of the Length of the Pendulum Which Beats Seconds at Berlin'; 'Investigations and Measurements made

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with a View to Establish a Metrical Unit for Prussia'; 'Measure of the Distance of the Sixty-first Star of the Constellation of the Swan,' and 'Popular Lectures on Scientific Questions.' Consult Herschel's 'Brief Notice of F. W. Bessel' (London 1847), and Durège, 'Bessels Leben und Wirken' (Zürich 1861).

**BESSELS, Emil**, German naturalist: b. Heidelberg, 2 June 1847; d. Stuttgart, 30 March 1888. He was educated in the University of Heidelberg, and while an assistant at the Royal Museum in Stuttgart became interested in the subject of Arctic research. In 1869 he was a member of Petermann's expedition that sailed into the sea between Spitzbergen and Nova Zembla. In 1871 he came to the United States and was appointed both naturalist and surgeon to the expedition under Capt. Charles F. Hall, United States navy, most of his collection being lost in the wreck of the *Polaris*. Most of the scientific results of this expedition were gathered by his personal efforts, and published under the title of 'Report on the Scientific Results of the *Polaris* Expedition' (1876). In 1879 he published a German narrative of the expedition, illustrated with his own sketches. Later he returned to Germany.

**BESSEMER, Sir Henry**, English inventor: b. Charlton, Hertfordshire, 19 Jan. 1813; d. London, 15 March 1898. He received mechanical training at an early age in the type foundry of his father, a French artist, and going to London at 18 began his career as a modeler and designer. His earliest invention was an improved method of stamping deeds which the revenue office straightway adopted without giving him any compensation therefor. Late in life he brought the matter to the attention of the government and was then knighted (1879) in acknowledgment of his services in this particular. His inventive ability was next turned to the production of a new method of making bronze-powder or "gold" paint, as it was called, which proved a commercial success, and subsequent inventions of his were machines for making Utrecht velvet and improvements in type-casting machinery. At the time of the war in the Crimea he designed a projectile intended to revolve in its flight, but as the cannon of that day were not strong enough to permit of its use, he went on experimenting in Paris under the patronage of Louis Napoleon till he had secured a much improved kind of cast iron. This, however, did not fully satisfy him and he continued at work refining the iron until steel was produced. He took out patents for this invention in 1855, but persevered in experiments till at his London bronze factory steel ingots had been manufactured which could be rolled into rails without hammering. When this process had become fully developed the Bessemer Steel Works were built in Sheffield, where, besides employing a large number of workmen in steel manufacture, many others were trained for similar work in factories all over the world. On 13 Aug. 1856, he read before the British Association at Cheltenham a paper dealing with the invention which has made his name famous, "The Manufacture of Malleable Iron and Steel without Fuel." This was a new and cheap process of rapidly making steel from pig-iron by blowing a blast of air through it when in a state of fusion, so as to clear it of all carbon, and then adding just the requisite quantity of carbon to produce steel — a process which has introduced a revolution in the steel-making trade, cheap steel being now made in vast quantities and used for many purposes in which its price formerly prohibited its application. At the Birmingham meeting in 1865 he read a second paper "On the Manufacture of Cast Steel, Its Progress and Employment as a Substitute for Wrought Iron." The Bessemer process not only stimulated the growth of the steel industry but greatly reduced the cost of manufacture and rendered steel available for rails and general engineering work. Bessemer was also the originator of a method still in use for compressing into a solid block the graphite employed in the manufacture of lead pencils; of a system of rollers for embossing and printing paper, and of improvements in telephones. In 1859 he received the Telford Medal of the Institute of Civil Engineers, and in 1872 the Albert Medal of the Society of Arts. He was president of the Iron and Steel Institute of Great Britain, 1871–73, and in 1879 became a Fellow of the Royal Society. In the United States eight localities and one railway bear his name. Bessemer was an honorary member of many foreign scientific and engineering societies, among which was the American Society of Mechanical Engineers. Before the latter, in December 1896, he presented a paper entitled "The Origin of the Bessemer Process," printed in its 'Transactions.'

**BESSEMER**, Ala., a city in Jefferson County, on several trunk railroads; 12 miles southwest of Birmingham, the county-seat. It was founded in 1887 as a manufacturing place because of the valuable iron and coal mines in its immediate vicinity. It contains iron foundries, coke ovens, a number of blast furnaces, machine shops, planing mills, iron pipe works, fire brick works, and other works connected with the iron and steel industry. The United States census of manufactures for 1914 recorded 47 industrial establishments of factory grade, employing 1,999 persons, of whom 1,772 were wage earners receiving annually $1,069,000 in wages. The capital invested aggregated $6,659,000 and the year's output was valued at $6,023,000: of this, $2,185,000 was the value added by manufacture. It has four banks, several weekly newspapers, electric lights, waterworks, a Carnegie library, the Elizabeth Duncan hospital, and a property valuation of $3,000,000. It is governed by a mayor elected biennially and a board of aldermen elected on a general ticket. Pop. (1910) 10,864; (1914) 15,000.

**BESSEMER STEEL PROCESS.** See BESSEMER, SIR HENRY; STEEL MANUFACTURE.

**BESSENYEI, György**, Hungarian dramatist: b. Berezel 1747; d. 1811. Being of a noble family he spent his earlier years in idleness, until, in his 18th year, he became a member of the court bodyguards. It was then that he began his serious studies, applying himself especially to foreign languages and literature, which led on to his first attempts at writing. His first work was a tragedy, 'Agis,' portraying a period of Spartan history (Vienna 1872), considered by Hungarian critics as the first of its kind in modern Hungarian literature. His comedies are also the first works of a humorous nature in

Hungarian. Chief of these is 'The Philosopher' (1777). Among his other works are 'Life of John Hunyadi' and a 'Philosophic History of Hungary.' He has been considered the father of modern Hungarian literature.

**BESSEY, Charles Edwin,** American botanist: b. Milton, Ohio, 21 May 1845; d. Lincoln, Neb., 25 Feb. 1915. He was graduated at the Michigan Agricultural College 1869, studied at Harvard under Asa Gray 1872 and 1875–76, and was professor of botany at the Iowa Agricultural College 1870–84; professor of botany at the University of Nebraska in 1884, and head dean of the university 1909. He published 'The Geography of Iowa' (1876); 'Botany for High Schools and Colleges' (1880); 'The Essentials of Botany' (1884); 'Elementary Botany' (1904); 'Plant Migration Studies' (1905); 'Synopsis of Plant Phyla' (1907); 'Outlines of Plant Phyla' (1909); and with others, 'New Elementary Agriculture' (1911).

**BESSIÉRES,** bĕs-yār, **Jean Baptiste,** DUKE OF ISTRIA, French marshal: b. Preissac, 5 Aug. 1768; d. Lützen, 1 May 1813. Entering the army in 1792 as a private soldier, in less than two years he had attained the rank of captain. After making the Spanish campaign, he passed into the army of Italy and soon attracted the notice of Napoleon who took him to Egypt in 1798, where his conduct at St. Jean d'Acre and Aboukir covered him with glory. At the accession of Napoleon to the throne, he became marshal of France. He showed his usual conspicuous courage at Austerlitz Jena, Eylau and Friedland, and, raised to the rank of Duke of Istria, commanded in Spain in 1808–09. In the Russian campaign he led the cavalry of the Guard, and did much by his sleepless courage and presence of mind to save the wreck of the army in the disastrous retreat from Moscow. On the morning of the battle of Lützen he fell mortally wounded by a cannon ball. He was a great cavalry leader, cool and dauntless, and beloved by his troops.

**BEST, William Thomas,** English musician: b. Carlisle, 13 Aug. 1826; d. Liverpool, 10 May 1897. In 1849 he was appointed organist of the Philharmonic Society in Liverpool; in 1853 he went to London and became organist of the Panopticon of Science and Art and also of the Church of Saint Martin-in-the-Fields; in 1854 he was organist of Lincoln's Inn Chapel and in 1855 organist of Saint George's Hall, Liverpool. He was the author of 'The Modern School for the Organ' (1853); 'The Art of Organ Playing' (1869); 'Arrangements from the Scores of the Great Masters' (1873), and was well known as an editor.

**BESTIARIES,** the name given to certain extremely popular books of the Middle Ages. In the written volumes, sometimes with copious illustrations, were given descriptions of animals, real and imaginary, which was which being left to the discretion or knowledge of the readers. They were composed in verse or prose or a mixture of both, and were designed not only as hand-books of zoology, but as teachers of morals as well. It was the fashion to attach spiritual meanings to the animals or their actions, until every quality of good or evil in the soul of man had its type in the beast world. It is to the bestiaries that we must look for explanation of the strange, grotesque creatures which are found sculptured on the churches and other buildings of the Middle Ages. The oldest Latin bestiaries had an early Greek original, the well-known 'Physiologus,' under which name about 50 such allegories were grouped. The Greek text of this famous work is found only in manuscript. There are old Syriac, Armenian, Ethiopic, Arabic, Icelandic and numerous Latin versions. Editions of the Latin have been issued — Mai, Heider and Cahier. An Old High German version was made earlier than the 11th century; in the 12th century versions in French were made by Philippe de Thaun and Guillaume, a priest of Normandy. The 'Bestiary of Love' of Richard de Fournival was rather a parody upon the earlier form of such books. The following is a characteristic extract from the 'Divine Bestiary': "The unicorn has but one horn in the middle of its forehead. It is the only animal that ventures to attack the elephant; and so sharp is the nail of its foot, that with one blow it rips up the belly of that most terrible of all beasts. The hunters can catch the unicorn only by placing a young virgin in the forest which it haunts. No sooner does this marvelous animal descry the damsel than it runs toward her, lies down at her feet, and so suffers itself to be taken by the hunters. The unicorn represents our Lord Jesus Christ, who, taking our humanity upon him in the Virgin's womb, was betrayed by the wicked Jews and delivered into the hands of Pilate. Its one horn signifies the gospel truth, that Christ is one with the Father," etc.

**BESTUZHEV,** bĕ-stoo'zhĕf, **Alexander Alexandrovitch,** Russian novelist and soldier: b. Saint Petersburg, 3 Nov. 1797; d. 19 July 1837. Of his numerous novels, the most celebrated are 'Ammalat-Beg'; 'The Nadeshda Frigate'; 'The Terrible Prophecy.' His 'Private Correspondence' is highly prized. He was killed in battle in the Caucasus.

**BESTUZHEV-RYUMIN,** bĕ-stoo'zhef ryoo'men, **Alexei Petrovitch,** COUNT, Russian statesman: b. Moscow 1693, of a family of English origin, and of the second class of nobles in Russia; d. Saint Petersburg, 21 April 1768. He entered the civil service under Peter the Great, and became a diplomatist. Under the Empress Anne he was made a member of the Cabinet, and the Empress Elizabeth, whose fullest confidence he possessed, created him count, great chancellor of the empire, and his influence in the government became almost boundless. He was strongly opposed to the Prussian and French diplomatic influence, and was disliked on this account by Peter III, nephew and presumptive heir of Elizabeth. He concluded several treaties with England, Sweden and Denmark, favorable to English policy. By a treaty concluded in 1747, he paved the way for the union of Schleswig and Holstein with the kingdom of Denmark. By his influence, the Russian troops supported Austria against Frederick the Great in the Seven Years' War. But their commander, Apraxin, retired to Russia, and this occasioned the fall of Bestuzhev. He was banished to his country seat, but Catharine II, in 1762, restored him to liberty and made him a field marshal. He is regarded as the inventor

of a chemical preparation known in medicine under the name of *tinctura tonica Bestucheffi*.

**BESTUZHEV-RYUMIN, Konstantin Nikolayevitch,** Russian historian: b. Kudresh, government of Nizhni Novgorod, 1829; d. 1897. After graduating from the University of Moscow, where he had studied law, he taught school. In 1856 he became associate editor of the *Moscow Gazette*. Later he removed to Saint Petersburg, where, in 1865, he was appointed professor of Russian history at the university. In 1890 he was elected to membership of the Imperial Academy of Science. He and Tiblin collaborated in translating Buckle's 'History of Civilization' into Russian. Among the more important of his works are 'The Christianization of Russia' (1864); 'The Black Days of Tatarism' (1864); 'Biographies and Characteristics' (1882). Of greatest importance was the 'History of Russia,' which he did not complete, of which only two volumes were published, the first in 1872 and the second in 1885. The last volume concludes with the reign of Ivan the Terrible.

**BETAIN,** or **BETAINE,** an organic base, having the chemical composition $C_5H_{11}NO_2$, obtained from the juice of the common beet, or from beet-root molasses. It is not present in the beet-root in nature, but is obtained from it by the action of baryta or hydrochloric acid. The hydrochloride is one of its most important salts. and numerous others are also known.

**BETANZOS,** bā-tän'thōs, **Juan José de,** Spanish historian of the 16th century. His biographers tell little of him, other than that he was among the first to accompany the nine expeditionaries to the Indies, that he remained a long time in the New World and there studied the customs, usages and language of the aborigines and at his death left the manuscript of the well-known and very interesting work entitled 'Historia de Indorum Moribus.'

**BETEL, BETLE, PAWN** or **PINANG,** popular Oriental names for various species of Chavica (see PEPPER), especially *C. betle,* and *C. siriboa,* climbing shrubs cultivated in the East for their leathery leaves which are used to a prodigious extent with bits of areca-nut and shell lime for chewing, particularly by the Malay races. The plants are trained upon trellises, poles, etc., in shady but hot and moist places, which in northern India are secured by means of sheds. Europeans do not take readily to the habit because the mixture is hot, acrid, astringent, abraids the mouth, temporarily destroys the sense of taste, reddens the lips as if they were covered with blood and blackens the teeth, which are sooner or later destroyed. At 25 years of age, habitués are often toothless. Among East Indian races the habit dates back more than 2,400 years and at the present time is as general as was the habit of using snuff among Europeans; the betel box is carried by old and young, men and women, and presented upon all occasions. Opinions differ as to the utility or perniciousness of this habit, some writers claiming advantages which in the face of the above-mentioned facts seem as far-fetched as like arguments in defense of the similar use of tobacco. Sir James Emerson Tennent is of opinion that the habit is beneficial to a people of whose food flesh forms no part, as it is the antacid, the tonic and carminative they require. Chavica is the genus into which the old genus *Piper* has been divided.

**BETELGEUSE,** bĕt-ĕl-gėrz', the star Alpha Orionis, the bright, reddish star in one of the shoulders of Orion. It varies somewhat in brightness, but in no regular period.

**BETH-AVEN,** "house of idolatry," mentioned in Joshua and Samuel, lay northwest of Michmash near Ai and on the way to Aijalon. The place was still inhabited during the 8th century B.C. The "calves of Beth-aven" were probably those at Bethel nearby.

**BETH-DAGON,** or **HOUSE OF DAGON,** the name of two Biblical cities whose location has not been determined. About four miles southeast of Jaffa stands a village named Beit Dejan, which has arisen in comparatively recent times. Khurbet Dajun, a Roman site, is close by. The other Beth-Dagon was a city of the tribe of Asher.

**BETH-HORON,** in Bible history, two important towns of Palestine, supposed to have been built by Sheerah, a daughter of Ephraim. In the neighborhood Joshua defeated the Canaanites; under Solomon both towns were strongly fortified; the Egyptian King Shishak passed along the high road to invade Judah, and here, also, the Syrian commander Seron was defeated by Judas Maccabæus. At a later period a Roman army under Cestius Gallus was driven back by the Jews. The site is occupied to-day by two villages barely two miles apart.

**BETH PEOR,** bĕth pē'ôr (Hebrew, house of Peor, i.e., the god of Baal-Peor), a city where the Israelites are said to have received the laws of Deuteronomy, and the supposed locality of Moses' burial. The precise locality of Beth Peor is undetermined, however, and various points have been suggested as probable sites, but the only theory which seems reasonably sure is that it stood somewhere among the Nebo-Pisgah Mountains. It belonged to the tribe of Reuben. Some geographers have suggested Ain el-Minyeh, on the northern side of the ridge, as the location of the city.

**BETH-SHAN,** or **BETH-SHEAN,** in ancient times a fortified town of Palestine, on the site of which stands the modern village of Beisân, inhabited by Circassians, and lies about 20 miles south of Tiberias, on the route of the Acre-Damascus railroad. It is believed that the stronghold was included in King Solomon's domains, but it belonged to the Philistines at the time of Saul, for it was there that they dishonored the bodies of Saul and his sons. The place was known as Scythopolis during the Greek period, and after the Maccabæan struggle it rose to prosperity as a member of the Decapolis, or league of 10 Greek cities. It retained its Canaanite population for a while during the Israelite occupation after submission to Manasseh.

**BETH-ZUR** or **BETHSURA,** "house of rock," a town of Judah in the Hebron Mountains. Rehoboam built the fortifications. The Greeks under Lysias were here defeated by Judas Maccabæus (165 B.C.). The ruins still exist on a cliff near the Hebron road; the site is called Beit Sur.

**BETHABARA,** the scene of Saint John's baptism. This name occurs only once (John i, 28), whereas the revised version, following the principal codices, reads Bethany (q.v.).

**BETHAM-EDWARDS, Matilda,** English author: b. Suffolk 1836. She was privately educated and has published numerous works in poetry, fiction and on French rural life. Among her works are 'The Dream Charlotte'; 'France of To-day'; 'A Romance of Dijon'; 'The Lord of the Harvest'; 'Anglo-French Reminiscences'; 'A Suffolk Courtship'; 'Literary Rambles in France'; 'French Men, Women and Books'; 'In French Africa'; three volumes of poems, and an edition of Arthur Young's 'Travels in France.'

**BETHANY,** a village of Palestine, at the foot of Mount Olivet, on the eastern side, about two miles east of Jerusalem, where Lazarus dwelt and was raised from the dead and where the ascension of Christ is related to have taken place. The house and grave of Lazarus and the house of Mary Magdalene are still shown to travelers.

**BETHANY,** Mo., city and county-seat of Harrison County, 64 miles northwest of Saint Joseph, on the Chicago, Burlington and Quincy Railroad. It has flour mills, brickyards and canning factories. The district is rich in agricultural and stock raising products. Building stone is quarried nearby. The city is the seat of Heilbron Sanatorium. The electric light and power plant is municipal property. Pop. 1,931.

**BETHANY COLLEGE,** American co-educational institution at Lindsborg, Kan., under the auspices of the Swedish Lutheran Church, founded in 1881. In 1884 arrangements were made for the training of teachers for the parochial and public schools; the name was accordingly changed to Bethany Normal Institute. In 1886 the school was invested with the power to confer academic degrees. It now has preparatory, normal, commercial, collegiate, model school, art and music departments, with 47 instructors and a student-body of 792, and a library of over 10,000 volumes.

**BETHANY COLLEGE** a co-educational institution at Bethany, W. Va. The college was chartered by the Legislature of Virginia, 2 March 1840. The total number of graduates is 1,448. Prominent alumni, Champ Clark, United States senator George T. Oliver, associate justice of the Supreme Court Joseph R. Lamar, John C. New and governor B. B. Odell. The endowment is $420,000; property assets $500,000; students enrolled 447; professors and instructors 30; courses offered classical, scientific, philosophical, ministerial, agricultural, domestic science, normal, music.

**BETHEL,** a village of Palestine, about 10 miles from Jerusalem, now called Beitin or Beiteen. It is situated at a point of strategic importance on which three roads converged and is mentioned frequently in the Old Testament. Here Abraham reared an altar and called on the name of the Lord (Gen. xiii, 4), and here Jacob, weary with travel, fell asleep and had a vision of angels, in commemoration of which he built an altar and called the place Bethel ("the house of God"). It is memorable in the story of the apostasy of Rehoboam and the miracle of the withered hand, when, instead of the house of God, it became Bethaven, the place of idols, until every memorial of the idolatry was destroyed by Josiah. Consult 1 Kings xii, xiii; 2 Kings xxiii, 15–20). In this neighborhood the two she-bears came out of the wood and tore forty and two of the children that had mocked at Elijah (2 Kings iii, 23, 24). It became a royal residence after the secession of the northern kingdom, and was one of the border fortresses. It was captured by Vespasian on his march to Jerusalem. It is not mentioned in the New Testament. Pop. about 500.

**BETHEL,** Maine, town in Oxford County situated on the Androscoggin River and the Grand Trunk Railroad, 70 miles northwest of Portland. It is a popular summer resort and is noted for its beautiful scenery. Being the centre of a lumbering region, it has a number of wood-working establishments, which produce chairs, spools, bobbins, etc. A large fish cannery is also located in the town. It contains Gould's Academy. Pop. 1,930.

**BETHELL, Sir Richard,** first Lord Westbury, English jurist: b. Bradford-on-Avon 1800; d. 20 July 1873. The son of a Bristol physician, he matriculated at Wadham College, Oxford, at 14, gained a scholarship the succeeding year and took his degree in his 18th year. He was called to the bar in 1823 and rapidly rose in his profession; was returned to the House of Commons, as member for Aylesbury, in 1851; became solicitor-general in 1852 and attorney-general 1856–57, rendering conspicuous service to Mr. Gladstone in carrying through the complicated Succession Duty Bill; and became Lord Chancellor in 1861, taking the title of Baron Westbury. As Lord Chancellor he carried through important reforms. Owing to scandals associated with the administration of a protégé of his in Leeds Bankruptcy Court, he was forced to resign. After his fall he did excellent work as one of the law lords.

**BETHENCOURT, Jean de,** bā-tŏn-koor, zhŏn dė, king of the Canary Islands: d. 1425. He was chamberlain to Charles VI of France, but being ruined in the war with England, he sought to repair his fortunes in foreign countries and made a descent from Spain on the Canary Islands in 1402. Not having sufficient force, however, he returned and obtained reinforcements from Henry III of Castile, with which he was successful and was crowned king in 1404, under the title of Louis. He converted the greater portion of the Canaries to Christianity and in 1405 received from the Pope the appointment of bishop to the islands. The following year he went to Normandy, where he passed the remainder of his days.

**BETHESDA,** bė-thĕz'dą, a pool in Jerusalem, the name of which signifies "house of the stream." In the five halls or porticos near it many patients lay waiting, according to the account of John (ch.v), for the moving of the waters to bathe in. According to the belief of the Jews, an angel descended, at a certain time, into the pool and troubled the water, and whoever first entered the water after this agitation was cured. It was near the Sheep Gate, north of the temple. The traditions as to Bethesda have varied. It was variously placed at differ-

ent times. A probable site for Bethesda is the Virgin's Pool, the only natural spring of Jerusalem, which still presents the phenomenon of intermittent "troubling of the water," which overflows from a natural siphon under the cave and in which the Jews continue to bathe, when this overflow occurs, for the cure of rheumatism and of other disorders. Consult Hastings, 'Dictionary of the Bible.'

**BETHLEHEM**, beth-le-em, or -hem, (*Beit Lahm*, "house of bread"; also known as Ephratah, "the fruitful"), Palestine, a village five miles from Jerusalem and only second to Jerusalem in sacred interest. It lies at the foot of a hill covered with vines and olive-trees, and is of surpassing interest to the Christian world as the birthplace of Jesus Christ. It is of frequent mention in both Old and New Testaments. It was the scene of Rachel's death (Gen. xxxv, 19) and of the romance of Ruth. It is the city of David, the scene of his early exploits and the home of his kindred. Here he was anointed by Samuel to be king of Israel (1 Sam. xvi, 13), and from Bethlehem he was sent for by Saul to minister to him with his harp (1 Sam. xvi, 19). It was one of the strongholds built by Rehoboam. After the Captivity a small band of Bethlehemites returned to their old dwelling-place. As the birthplace of Christ it is one of the great Christian shrines of Palestine. The Church of the Nativity, erected by the Empress Helena in 327, 120 feet long by 110 broad, is divided into nave and four aisles by ranges of Corinthian columns with crests of the Crusaders on some of the stones. The nave is the oldest monument of Christian architecture in the world. The mosaics date from 1169. The site is held in common by Latins, Greeks and Armenians, and the greater part of the building is occupied by converts of those churches. In this church Baldwin I was crowned. The roof was renewed in English oak by Edward IV. Below the church is the grotto of the Nativity, 33 feet long by 11 wide, furnished with silver and crystal lamps, where a marble trough is shown, traditionally believed to be the manger in which Christ was born. Other objects of interest are the Altar of the Innocents, marking the burial place of the 20,000 children slain by Herod, the tomb of Saint Eusebius, the chapel and tomb of Saint Jerome and (some distance off) the grotto where the shepherds watched by night when the angels appeared to them (Luke ii, 8–18). In order to prevent confusion with another place of the same name, seven miles northwest of Nazareth, mentioned in Joshua xix, 15, it is called Bethlehem Judah. It is the most Christian town in southern Palestine. Agriculture and the rearing of cattle are the chief occupations of its inhabitants, and the making of rosaries, crucifixes, etc., for pilgrims to the sacred shrines. Pop. 8,000.

**BETHLEHEM**, Pa., borough of Northampton and Lehigh Counties, on the Lehigh river and canal, and on the Lehigh Valley, the Central of New Jersey, the Pennsylvania and the Lehigh and New England railroads, 57 miles north of Philadelphia. It is prominent both as a manufacturing centre, the seat of important steel and other works, and as a musical centre, sometimes referred to as the "American Bayreuth" and the "American Oberammergau." Among its prominent buildings are those of the Moravian college and theological seminary, the Moravian seminary for girls, the Church of the Nativity, Saint Luke's Hospital and a public library, while on Church and neighboring streets are notable dwellings built in the 17th century style of domestic architecture of eastern Germany. On the opposite side of the river, here spanned by three bridges, is South Bethlehem (q.v.), the seat of Lehigh University, of the Lehigh Valley Railroad Company, of the famous Bethlehem steel works and other important manufacturing establishments. Monocacy Creek separates Bethlehem from West Bethlehem, formerly a separate borough but since 1904 consolidated with Bethlehem borough. Bethlehem was founded in 1741 by Moravians or United Brethren under Count Nikolaus Ludwig Zinzendorf, shortly before Christmas, which suggested its name, and it has remained ever since the chief centre of the Moravian sect in the United States. The old colonial hall in the seminary, built in 1748, was used as a general hospital for the Continental army during the Revolutionary War, and over 500 soldiers lie buried in West Bethlehem. On festival and funeral occasions, the old European custom of trumpet playing from the tower was early established and Bethlehem soon became recognized as a musical centre, Benjamin Franklin recording his impressions of the fine orchestral music rendered in the church. In modern days, under the directorship of J. Frederick Wolle, a pupil of Rheinberger and organist of the Moravian Church, Bethlehem attained a conspicuous position in the musical world from the institution of an annual festival largely devoted to the compositions of Johann Sebastian Bach. The first organized festival was held in 1901 and attracted considerable attention, lasting for three days. During Mr. Wolle's absence in California, from 1906 to 1911, when he gave annual Bach festivals at Berkeley, the Bethlehem festivals were discontinued, but were resumed on his return in 1912. Pop. (1900) 7,293; (1910) 12,837. See also MORAVIAN CHURCH and MORAVIAN SEMINARY.

**BETHLEHEMITES.** (1) An order of monks somewhat like the Dominicans, who settled in England in 1257. They were so named because they wore on the breast a five-pointed star in commemoration of the star that appeared at the birth of Jesus. The order was comparatively insignificant and had only one convent in England (at Cambridge). (2) An order of American Bethlehemites, sanctioned by Innocent XI in 1687, was established in the city of Guatemala by a Franciscan monk named Pedro de Bethencourt (1619–67), a native of the island of Teneriffe, about 1655, and was specially devoted to the nursing of the sick and the education of children. It became extinct about 1850. A female order of Bethlehemites also was founded by Maria Anna del Galdo, who belonged to the Tertiaries of Saint Francis. Twenty years later the privileges of the order were enlarged to an equality with those of the Augustinians, Dominicans and Franciscans. (3) The followers of Huss are sometimes called Bethlehemites, from the name of the church in Prague in which Huss preached.

**BETHLEN-GABOR**, bĕt-lĕm gä'bôr, or **GABRIEL BETHLEN**, Prince of Transylvania: b. 1580; d. 1629. He was a member of a prominent Protestant family of upper Hungary, which also held large estates in Transylvania. At the age of 17 he entered the service of Gabriel Bathori, prince of Transylvania, fought under his orders and then repaired to Constantinople, where his courage gained him the esteem of the Turks. Prompted by ambition, he became ungrateful to his first benefactor, and after bringing Bathori into bad odor with both the Transylvanians and the Turks, managed to make the latter declare war and actually headed a Turkish army against him. His treachery was successful and in 1613 he was proclaimed prince of Transylvania in defiance of the Emperor. Shortly after, having succeeded in stirring up the Hungarians against the Emperor Frederick II, he took several towns and in 1620 was chosen king of Hungary. Thereafter, supported by Turks and Tartars, he entered Austrian territory, laid waste Moravia, hemmed in the imperial army and was on the eve of gaining a complete victory when the refusal of the Turks to undergo a winter campaign defeated all his hopes. The approach of Tilly compelled him to withdraw. The Protestants of Germany were his allies, and when they were worsted at the battle of Prague Bethlen-Gabor concluded peace with Ferdinand II, receiving Kaschau, seven Hungarian counties adjoining Transylvania, the principalities of Oppeln and Ratibor in Silesia and the rank of Prince of the Empire. In 1625 he married Catharine of Brandenburg and became again involved in the Thirty Years' War. He at length retired from the strife and gave his attention to the internal affairs of Transylvania. He was one of "the three great Magyars" of his time, was an able administrator and a promoter of sciences and literature. While preparing for a new war against the imperialists he died of dropsy. He is said to have participated in 42 battles.

**BETHMANN-HOLLWEG, Moritz August**, German jurist and statesman: b. Frankfort-on-the-Main, 10 April 1795; d. Andernach, 14 July 1877. Having graduated from his law studies at Göttingen and Berlin, he was appointed professor of civil law at the latter institution. In 1829 he was appointed to a similar position at Bonn, which he held until 1842. Three years later he was made a councillor of state and in 1852 he became a member of the First Chamber of the Prussian Parliament. In 1858 he was appointed Minister of Public Instruction, which office he held for four years. He was a strong supporter of the Moderate Constitutionalist Party. As a writer on jurisprudence he had a deep influence in the reforms of the German laws following the enactment of the German Civil Code in 1896. Among his works are 'Grundriss zu Vorlesungen über den gemeinen und preussischen Civilprozess' (1821); 'Ursprung der lombardischen Städtefreiheit' (1846); 'Der Civilprozess des gemeinen Rechts in geschichtlicher Entwickelung' (6 vols., 1864–74); 'Ueber Gestezgebung und Rechtswissenshaft als Aufgabe unserer Zeit' (1876).

**BETHMANN-HOLLWEG, Theobald Theodore Friedrich Alfred von**, German statesman: b. Hohenfinow, Brandenburg, 29 Nov. 1856. Descended from one of the oldest patrician families, who were engaged as bankers at Frankfort-on-Main, he was educated at the Universities of Strassburg, Leipzig, Berlin and Bonn. At the last named he was a fellow-student of the future Kaiser Wilhelm II; a close friendship was formed between them. Bethmann-Hollweg entered the civil service in 1879, was appointed Landrat of Ober-Barnim in Brandenburg in 1885 and thence rose in rapid succession to provincial president of Potsdam, president of the government of Bromberg and president of the province of Brandenburg. He became Prussian Minister of the Interior in 1905, introduced numerous important social reforms and in 1907 was appointed Imperial Home Secretary and vice-president of the Prussian Council. On 14 July 1909 the Kaiser conferred the greatest office of the state upon Doctor Bethmann-Hollweg by making him Imperial German Chancellor in succession to Prince Buelow. Two notable incidents of his chancellorship were the Agadir crisis of 1911 and the famous Zabern affair, which resulted in the censure of the imperial and military executives by a large majority in the Reichstag. But it was the European War and its diplomatic connections that made the Chancellor a prominent actor in the drama. He was the author of the now famous phrase describing the Treaty of 1839, which guaranteed the neutrality of Belgium, as "a scrap of paper." Much has been written concerning his personal share in the events of July and August 1914; that part of history remains for the future. In his speech in the Reichstag on 4 Aug. 1914, when the violation of Belgian neutrality was already in progress, he said: "We are now in a state of necessity, and necessity knows no law. Our troops have occupied Luxemburg and perhaps have already entered Belgian territory. Gentlemen, this is a breach of international law. It is true that the French government declared at Brussels that France would respect Belgian neutrality as long as her adversary respected it. We knew, however, that France stood ready for an invasion. France could wait, we could not. . . . Thus we were forced to ignore the rightful protests of the governments of Luxemburg and Belgium. The wrong — I speak openly — the wrong we thereby commit we will try to make good as soon as our military aims have been attained. He who is menaced as we are and is fighting for his highest possession can only consider how he is to hack his way through (wie er sich durchhauen kann)." Later in the evening the British Ambassador called upon him for a final interview. Sir W. E. Goschen reported: "I found the Chancellor very agitated. . . . He at once began a harangue, which lasted for about 20 minutes. . . . Just for a word — *neutrality* — a word which in war time had so often been disregarded — just for a scrap of paper Great Britain was going to make war on a kindred nation who desired nothing better than to be friends with her. . . . He held Great Britain responsible for all the terrible events that might happen." (See WAR, EUROPEAN — DIPLOMATIC HISTORY). On the eighth anniversary of Doctor Bethmann-Hollweg's assuming the office

of Chancellor, the following was sent out through the wireless stations of the German government: "The Kaiser has accepted the resignation tendered by the Imperial Chancellor, Herr von Bethmann-Hollweg, and has appointed as his successor the Prussian Under-Secretary of Finance, Herr Michaelis" (14 July 1917). The Chancellor fell as a result of the powerful opposition he encountered from the military party. He has the reputation of being a man of peace, a scholar and a philosopher, yet he has been identified throughout his official career with the agrarian and military caste known as Junkers (q.v.). He had never served in the army, but since the war he was appointed to an honorary rank which carried with it the wearing of a general's uniform. The Kaiser has more than once offered him a title, which he has steadily refused. His activities as Chancellor are spread over a wide field, not the least important being the various peace manœuvres conducted under his official patronage. See GERMANY — HISTORY; MOROCCO; PEACE PROPOSALS; WILLIAM II.

**BETHNAL GREEN,** England, a metropolitan and parliamentary borough in the east end of London, Middlesex County. Area 759 acres. It was formerly a great centre of the weaving industry. The chief industries are now bootmaking, cabinet-making and matches. The borough returns two members to Parliament. Pop. (1911) 128,183. Consult Allgood, 'History of Bethnal Green' (1894); Gavin, 'Sanitary Ramblings — Sketches and Illustrations of Bethnal Green' (1848).

**BETHPHAGE,** bĕth'fāj (Hebrew, "house of figs"), a place of Scriptural interest, of which no trace is left. Its name was significant of its general location but not of the particular site. "The place of figs," it must have been situated somewhere on the eastern slope of that range of hills extending north and south between Jerusalem and Bethany, at the foot of which in the western valley flowed the Kedron. The principal points of this range are the Mount of Offence and the Mount of Olives. The fig-tree still abounds both on the eastern and western slopes of the range and even beyond Bethany toward Jericho. Some travelers have been disposed to place Bethphage on the site of the modern village of Abu Dis, lying south and a little to the east of Bethany. Robinson thought this could not have been its position and gave little credit to the tradition of the monks of the country, who place it between Bethany and the summit of the Mount of Olives, since there is no trace that a village of any description ever existed there. Lightfoot thought it was a district extending from the Mount of Olives to Jerusalem and embracing a village of the same name.

**BETHSAIDA,** bĕth-sā'ĭ-dą, Palestine, village on the west shore of the Lake of Galilee, a little east of where the Jordan enters and near the newer Greek city, which was some distance back from the shore. It was the birthplace of Peter and Andrew and Philip. Its site has been identified with a heap of grass-grown ruins. At the northeast extremity of the lake was another Bethsaida, a village near which the 5,000 were fed. Philip the Tetrarch raised it to the dignity of a town and renamed it Julias, in honor of the Emperor Augustus' daughter.

**BETHSHEMESH,** bĕth-she'mesh (Hebrew, "house of the sun"), a city of ancient Palestine, which probably occupied the site of the modern village, Ain Shems, about 15 miles west-southwest of Jerusalem, where extensive ruins are still remaining. The exploits of Samson were mainly in the neighborhood of Bethshemesh.

**BETHUNE, Alexander Neil,** Canadian clergyman: b. Glengarry, Ont., 28 Aug. 1800; d. 3 Feb. 1879. He was ordained to the priesthood in 1824, became archdeacon of York in 1846, coadjutor to Bishop Strachan of Toronto in 1867 and succeeded to the bishopric in the same year. He wrote the biography of Bishop Strachan.

**BETHUNE, George Washington,** American Dutch Reformed clergyman and poet: b. New York, 18 March 1805; d. Florence, Italy, 27 April 1862. He was educated at Dickinson College and at Princeton Theological Seminary. He had charges at Rhinebeck and Utica, N. Y., Philadelphia, Brooklyn and New York city. In 1859 he visited Italy to improve his health and in 1861 again went to Italy, where he died of apoplexy. He was noted as an orator, wit, poet, scholar and angler. Besides religious works, he wrote 'British Female Poets'; 'Lays of Love and Faith' (1847); several of the hymns which are widely used; 'Orations and Discourses' (1850); 'Memoirs of Joanna Bethune' (1864). He also published an edition of Izaak Walton's 'Complete Angler' (1846), etc. Consult the life by A. R. Van Nest (New York 1867).

**BETHUNE,** bā-tün, France, town in the department of Pas de Calais, 19 miles north-northwest of Arras. It stands on a rock washed by the Brette and is a place of considerable strength. The appearance of the town is not prepossessing. There is, however, one fine square, the centre of which is occupied by an ancient belfry of remarkable construction, while the hotel-de-ville, among the best edifices in the town, forms one of its sides. The chief manufactures are oil, soap and cloth. There are also distilleries, tanneries and salt and sugar refineries. The trade is greatly favored by the canals of Lawe and Bassée, which meet here. The family of the lords of Bethune is very celebrated and a branch of it was established in Scotland about the end of the 12th century. To this branch the celebrated Cardinal Beaton belonged. During the great European War Bethune formed part of the "debatable land" in which German and British forces faced each other in the trench warfare of 1915 and 1916. Pop. 15,309.

**BETLIS,** or **Bitlis,** Turkish Armenia, a town about 20 miles west from Lake Van. It is one of the most ancient cities of Kurdistan, situated in a wide ravine traversed by a stream on whose steep banks the town is built. The houses are of red stone, generally two stories in height, with grated windows to the streets. In the centre, on a high rock, is an ancient castle, formerly the residence of the Khans of Betlis. The country around is fertile, well cultivated and produces excellent

crops of grain, cotton, hemp, rice, olives, tobacco of the best description and excellent fruits and vegetables. The principal manufactures of the town are coarse cotton cloth and tobacco. In February 1916, during the great Russian drive in Armenia, Betlis was occupied by the Russians following on the capture of Erzerum. Pop. about 30,000.

**BETOYAN,** a primitive but widely-extended branch of the South American Indians, between 67° and 73° west longitude, covering parts of eastern and southern Columbia and the neighboring regions of Venezuela and Brazil. Consult Koch-Grunberg's 'Zwei Jahre unter den Indianern,' and 'Reisen in Nordwest Brasilien 1903–05' (Berlin 1910).

**BETROTHED, The.** (1) A famous romance by Alessandro Manzoni — 'I Promessi Sposi.' (See below). (2) A novel by Sir Walter Scott (1825), the scene of which is laid in the reign of Henry II. (3) An opera by Petrella, first sung in 1869 at Lecco.

**BETROTHED, The** ('I Promessi Sposi'). There are three redactions of this masterpiece of Alessandro Manzoni. The first (1821–23) bore the title 'Fermo e Lucia' and constituted a vast historical canvas, rich in digressive episode of Milanese life around 1630, the year of the great pestilence. In the second, entitled in manuscript 'Gli sposi promessi' and published in 1827 as 'I promessi sposi,' we have a thorough critical revision. The historical materials extraneous to the story proper are made more proportionate to the imaginative content, while the ethical purpose of the novel more rigidly controls. In preparation for the third and final edition (1840–42) Manzoni had "washed his duds in the Arno," as he modestly avers. It expresses the Manzonian theory, now triumphant, of the national Italian language. 'I promessi sposi' in this form is the leading classic model of modern Italian speech. This romance is the best Italian effort in prose of the Romantic period. It substituted sound historical scholarship and studied psychological portraiture for the sentimentality of the *mal du siècle* and the purposeless adventures of the old romanesque novels. It gave a typical and evolved interpretation of Italian middle-class idealism, democratic (*civile*) in outlook, Roman Catholic in inspiration, conservative and evolutionary in tactic. In artistic mood, it shows a kindly, ironical scepticism toward human nature, expressed subtly in the conception of the plot and more openly in frequent epigrammatic flashes. The conviction that man's efforts are powerless to win happiness leads Manzoni to a pessimism essentially passive and inactive; save that this feeling is but the groundwork for something more positive. Through faith in God and in the triumph of righteousness we may take refuge in a peaceful and secure optimism. "When troubles come, deserved or undeserved, trust in God softens them and makes them useful to a better life." In lifting the veil delicately from the hidden vanities of his characters to reveal their helplessness in their pride, Manzoni finds a source of a rich humor, discerning but free from bitterness. The plot, baldly summarized, is amusingly melodramatic. Renzo and Lucia, two naïve and simple peasants, by the wickedness of a bold, bad baron, and the deliciously human weakness of a priest, Don Abbondio — the most popular figure of the novel — are prevented from marrying; and compelled to flee from their homes, they are caught up in the turmoil of great events occurring in their province. This review of 17th century society is accurate and sound. Its various traits and tendencies are incarnated in characters elaborated in detail. Hardly one of them but has become in some aspect or phrase proverbial; for belonging exactly to their own ancient period, they reflect Manzoni's characteristic view of life, and are universally typical of humanity. The sagaciously worldly saint, Padre Cristoforo; the unwilling nun (*monaca forzata*) Gertrude; the converted reprobate called *l'Innominato;* the officious and wisely blundering mother, Agnese, are all famous and engaging personages. Perhaps the best-known section of the book is the lurid description of the pestilence at Milan, with its weird superstitious terrors. In the portrayal of feudal Italy, crushed by foreign oppression, modern Italian patriotism has always found much stimulus. Nevertheless, the complexity and delicacy of Manzoni's humorous touch makes the full richness of 'I promessi sposi' accessible only to maturer minds. It seemed disappointingly oppressive and quiescent to the more turbulent spirits even of its own age. Forced, by its linguistic prestige, upon Italian children, it presents to them the conventional requisites of the textbook: dullness and sublimity. 'I promessi sposi' is not only the 'Ivanhoe,' but the 'Vicar of Wakefield' of Italians. A distinguished American, Andrew D. White, has called it the best novel ever written; which means simply that it can be read over and over again with increasing pleasure, due to ever new discoveries, though it will never have for Americans the glamour of sanctity with which the Italian scholastic tradition surrounds it as the principal model of the mother tongue.

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**BETROTHMENT, or BETROTHAL,** a mutual promise or compact between two parties, by which they bind themselves to marry. The word imports giving one's troth, that is, true faith or promise. Formal ceremonies of betrothment are not the custom in the United States and Great Britain, as on the Continent, where the betrothment is either solemn (made in the face of the church) or private (made before witnesses out of the church). As betrothments are contracts, they are subject to the same rules as other contracts; for instance, that they are valid only between persons whose capacity is recognized by law; and the use of fraud, violence or intimidation vitiates the contract. The consent of both parties, of course, is required. This may be expressed either verbally, or by writing, or by action. In Germany the consent of the parents is always necessary, if the parties are under age, not yet *sui juris.* But if the parents withhold their consent unreasonably, the permission of a judge is allowed to sanction the contract. If the opinions of the parents are diverse, the law gives effect to that of the father. Betrothments contracted thus, according to law, are called *sponsalia publica;* others are called *sponsalia clandestina.* The latter are, in some

places, utterly invalid; in others, only punishable. By the common German law, however, they are valid in every case in which consummation or consecration by the priest has taken place. The parents, in these cases, are not allowed to apply for a dissolution of the contract, nor can they refuse their consent, except for highly important reasons. Public betrothment induces the obligation to marry. In case of refusal to complete the contract by marriage, the injured party is allowed an action at law to compel its performance; but, since unhappy marriages are among the greatest misfortunes, the means of compulsion applied by the law are never great, amounting only to a small fine or a short imprisonment. If circumstances take place which, if happening before the betrothment, would have necessarily prevented it, the party affected by them is allowed to recede from the engagement, and modern laws allow only an action for damages. In Germany betrothment generally takes place in a small company of relations and friends. In Russia it was once binding and indissoluble, like marriage, but is now a mere form accompanying the marriage ceremony. The contract is called by the Jews *thenaim rischonim*. In the laws of Moses there are certain provisions respecting the state of the virgin who is betrothed. Selden's 'Uxor Hebraica' gives the schedule of Hebrew contracts of betrothment. With the Jews, a young woman is rarely allowed to enter into an engagement without the cognizance of her relatives, who, in fact, in most cases, arrange matters for her and generally avail themselves of the services of marriage brokers, who receive a percentage upon the amount of the dowry, beside a gratuity. In continental cities these Jew marriage brokers have matches always on hand, with dowries varying from $5,000 to $200,000, and as soon as the betrothment has taken place they look upon the bargain as concluded; but cases frequently occur in which on the day of the wedding the bridegroom breaks the match because the Austrian metalliques or Spanish Ardoins, tendered in payment for the dowry, have fallen in value and reduced the dowry perhaps to the extent of 20 or 25 per cent. Among the ancient Greeks, the father made a selection for his daughter. The young couple kissed each other for the first time in the presence of their friends, and it was customary for the bridegroom to bring flowers daily, until the wedding day, to the house of his bride. The Arab sends a relative to negotiate about his intended bride and the price at which she is to be had. The bridegroom of Kamchatka has to serve in the house of his prospective father-in-law before an engagement is allowed to take place. With the Letts and Esthonians no engagement is considered valid until the parent and relatives of the bride have tasted of the brandy which the bridegroom presents. Among the Hottentots, the would-be bridegroom is not allowed to propose without being accompanied by his father. Father and son walk arm in arm, with pipes in their mouths, to the house of the bride, where the engagement takes place. Among some of the indigenous tribes of America it was customary to keep the betrothed lady in durance for 40 days, as the superstition prevailed that she would exert an occult influence upon anything she touched or anybody with whom she came into contact. During these 40 days the lady was kept on starvation fare, so that when the day of the wedding came she looked more like a skeleton than a bride. Consult Pollock and Maitland, 'History of English Law' (2d ed., 1899); Hutchinson, H. N., 'Marriage Customs in Many Lands' (1897); and Miln, L. J., 'Wooings and Weddings in Many Lands' (1900).

**BETSY AND I ARE OUT**, the title of a popular American poem by Will Carleton (q.v.), first printed in the Toledo *Blade* in 1872. It was followed by 'Betsy and I Made Up.'

**BETTELHEIM, Anton,** Austrian author: b. Vienna, 18 Nov. 1851. Having graduated from the universities at Vienna and Munich he immediately devoted himself to a literary career. Most of his writings have been biographical. He edited the collection of biographies 'Führende Geister,' to which he contributed a biography of Anzengruber (1891, 2d ed., 1897). He was editor of the 'Allgemeine Deutsche Biographie.' Among his notable biographies are 'Deutsche Geisteshelden' (1895); 'Louise von François und Conrad F. Meyer' (1905); 'Auerbach' (1907); 'Prince Hohenlohe' (1910).

**BETTERTON, Thomas,** English actor: b. August 1635; d. London, 28 April 1710. He was the son of an under-cook in the service of Charles I, and was apprenticed to a bookseller in London. His master, Mr. Rhodes, obtained a license for a company of players in 1659, and with him Betterton commenced his career. He was engaged by Davenant in 1661 for Lincoln's Inn Fields theatre. He was sent by royal command to visit Paris with a view to the adoption of French methods of staging, etc., in England. For his performance of Alvars in 'Love for Love,' Charles II lent him his coronation suit. His position was pre-eminent. He seems to have had no personal graces from nature to second his rare talents, if the following account be true: "Mr. Betterton, though a superlatively good actor, labored under an ill figure, being clumsily made, having a great head, a short thick neck, stooped in the shoulders, and had fat, short arms, which he rarely lifted higher than his stomach. His left hand frequently lodged in his breast between his coat and waistcoat; while with his right he prepared his speech; his actions were few but just; he had little eyes and a broad face, a little pockfretten; a corpulent body, and thick legs, with large feet; he was better to meet than to follow, for his aspect was serious, venerable, and majestic. In his latter time, a little paralytic; his voice was low and grumbling, yet he could tune it by an artful climax which enforced universal attention even from the fops and orange girls. He was incapable of dancing even in a country dance, as was Mr. Barry, but their good qualities were more than equal to their deficiencies." Betterton had the rare faculty of identifying himself with his part. He married Mrs. Sanderson, an actress of almost equal merit with himself, whose Lady Macbeth was reckoned a perfect piece of acting. He was prudent and saving, but he lost his small means in a commercial speculation, and a theatre which he afterward opened was not successful. After

his retirement from the stage, he reappeared in his old age a few times to take a benefit, his last appearance being 13 April 1710. He was the author of three plays. He was buried in Westminster Abbey. Consult Howe, 'Thomas Betterton' (1801); 'Life and Times of Thomas Betterton' (1888).

**BETTINELLI**, bĕt-tę-nĕl'lę, **Saverio**, Italian author: b. Mantua, 1718; d. 1808. He studied under the Jesuits; entered, in 1736, the novitiate of this order, and taught from 1739 to 1744, belles-lettres at Brescia, where he made himself known by some poems composed for the use of schools. In Bologna, where he studied theology, he continued to cultivate his poetical talents, and wrote for the theatre of the college his tragedy of Jonathan. In 1751 he was entrusted with the direction of the college of nobles at Parma. After the suppression of the Jesuits in 1773 he returned to his native city, where he resumed his literary labors. His chief work is his 'Risorgimento negli studj, nelle Arti e ne' Costumi dopo il Mille' (1775). The 'Lettere dieci di Virgilio agli Arcadi' attracted great attention, and its criticism of the older poets, particularly Dante, involved him in many controversies. The best of his poems are his 'Vers sciolti,' which though they do not show any great poetical power, are always elegant and ingenious. His collected works appeared in 24 vols., 1799–1801.

**BETTING**, the staking or pledging of money or property upon a contingency or issue. The processes of betting may be best illustrated in connection with horse-racing, which furnishes the members of the betting fraternity with their best markets. Bettors are divided into two classes — the backers of horses, and the bookmakers, or professional bettors, who form the betting ring, and make a living by betting against horses according to a methodical plan. By the method adopted by the professional bettor the element of chance is as far as possible removed from his transactions, so that he can calculate, with a reasonable prospect of having his calculations verified, on making more or less profit as the result of a season's engagements. Instead of backing any particular horse, the professional bettor lays the same sum against every horse that takes the field, or a certain number of them, and in doing so has usually to give odds, which are greater or less according to the estimate formed of the chance of success which each of the horses has on which the odds are given. In this way, while in the event of the race being won (as is usually the case) by any of the horses entered in the betting-book of a professional bettor, the latter has always a certain fixed sum (say $1,000) to pay, he receives from the backers of the losers sums which vary in proportion to the odds given. Thus, if a bookmaker is making a $1,000 book, and the odds against some horse is four to one, he will, if that horse wins, have to pay $1,000, while, if it loses, he will receive $250. It usually depends upon which horse it is that wins a race whether the bookmaker gains or loses. If the first favorite wins it is evidently the worst thing that could happen for the bookmaker, for as he is bound to receive the sum of the amounts to which all the horses except one have been backed, the largest deduction must be made from his total receipts on account of the first favorite. Very frequently the receipts of the bookmaker are augmented by sums paid on account of horses which have been backed and never run at all. Sometimes, although not often, the odds are given upon and not against a particular horse. Books may also be made up on the principle of betting against any particular horse getting a place among the first three. The odds in this case are usually one-fourth of the odds given against the same horse winning. Another mode of betting is that called a sweepstake, in which a number of persons join in contributing a certain stake, after which each of those taking part in the sweepstake has a horse assigned to him (usually by lot), which he backs, and the backer of the winning horse gains the whole stakes. If there are more persons taking part in the sweepstake than there are horses running some of them must draw blanks, in which case of course their stakes are at once lost.

At common law, wagers are not *per se*, void, but statutes prohibiting betting have been passed by many of the States. When one who loses a wager gets another to pay the money for him, an action lies for the recovery of the money. Wagers on the event of an election laid before the poll is open, or after it is closed, are illegal. In horse-racing, simple bets upon a race are unlawful both in England and the United States. In the case even of a legal wager, the authority of a stakeholder, like that of an arbitrator, may be rescinded by either party before the event happens. See WAGER.

**BETTS, Samuel Rossiter**, American jurist: b. Richmond, Mass., 8 June 1787; d. New Haven, Conn., 2 Nov. 1868. He practised law in Sullivan County, N. Y.; served in the War of 1812 and first became prominent when appointed judge advocate. He was a member of Congress 1815–17; Circuit Court judge, 1823–26; and United States district judge, 1827–67. As codifier of the maritime laws of the United States he exercised a clarifying influence upon such questions as salvage, wages, charters, insurance, seamen's wages, etc., and the formulation of the neutrality and patent laws. Despite the enormous volume of business brought to him over a long period his decisions were uniformly upheld. Hoffmann, Van Buren, Webster, Hall, Emmet and Choate were among the eminent lawyers who conducted cases before him. He published 'Admiralty Practice' (1838).

**BETULA**, the generic name of birch (q.v).

**BETWA**, Hindustan, a river which takes its rise in the Vindhya Mountains, near Bhopal, and flowing nearly 340 miles in a northeasterly direction through the provinces of Malwa and Allahabad, finally joins the Jumna below Kalpee. Near Erech a slight fall occurs. The country through which it flows is highly cultivated. The river at times is said to rise to a great height and in a portion of its course flows through beds of iron ore. The towns Bhilsa and Jhansi are located on its banks.

**BETZ, Franz**, German opera singer: b. Mainz, 19 March 1835; d. Berlin, 11 Aug. 1900. He made his first appearance in 1855 and four years later became a member of the Royal Opera House Company at Berlin, where he first appeared in Verdi's 'Ernani.' Wagner chose him to create the part of Hans Sachs at

Munich in 1868 and of Wotan at Beyreuth in 1876, after which he devoted himself entirely to Wagnerian opera.

**BEULAH**, bū'la, a region described in Bunyan's 'Pilgrim's Progress,' where there is nothing to annoy and all sounds are agreeable.

**BEULÉ, Charles Ernest**, French archæologist and politician: b. Saumur, 29 June 1826; d. 4 April 1874. Having graduated from the École Normal in Paris, he was for a time professor of rhetoric. In 1849 he accompanied an expedition of French archæologists to Greece, where he discovered the propylæa of the Acropolis. On his return to Paris he was appointed professor of archæology at the Bibliothèque Nationale. In 1858 he undertook on his own account a trip to the site of Carthage. The latter part of his life was devoted to politics. In 1871 he was elected to the National Assembly, where he showed himself an ardent royalist. In 1873 he was for a brief period Minister of the Interior under MacMahon. Among his works are 'L'acropole d'Athènes' (2 vols., 1854); 'Etudes sur le Peloponnèse' (1855); 'Les monnaies d'Athènes' (1858); 'Histoire de l'art grec avant Périclès' (1868;); 'Le procès de Césars' (4 vols., 1870).

**BEURMANN, Karl Moritz von**, German African explorer; b. Potsdam, 28 July 1835; d. Mao, Africa, February 1863. In 1853 he began his studies at the Military Engineering School at Berlin, from which he graduated and became an officer in the engineer corps of the German Army. In 1860 he left the military service and accompanied an exploring expedition to the Nile and the Nubian Desert. Two years later he set forth on an exploring expedition on his own account, to seek traces of Eduard Vogel (q.v.) who had gone into the interior of Africa and had not since been heard from. Beurmann had as his objective Wadai. He proceeded to Kuka, the capital of Bornu, thence southwest to Yakoba, capital of Bautshi. Thence he set out for Wadai, but was compelled to return on account of the desertion of his carriers, who also robbed him of his outfit. A month later he made another start, reaching the frontier of Wadai, where, like Vogel, he was murdered at the command of the Sultan. His one work is 'Glossar der Tigrésprache' (Leipzig 1868) which was also published in English (Halle 1868). A biographical sketch, by A. Merx, appears in 'Jahresbericht des Leipziger Vereins für Erdkunde' (1866).

**BEURNONVILLE, bėr-nŏn-vēl, Marquis de** (Pierre de Ruel, pē-ār de rü-ĕl), marshal of France: b. Champignolle, Burgundy, 10 May 1752: d. 23 April 1821. He served in the east until 1789. Arriving in Paris at the commencement of the Revolution, he identified himself at once with it, and in 1792 commanded on the Moselle; in 1793 he became minister of war. Sent in 1793 to arrest Dumouriez, he was himself arrested by Dumouriez, and confined until 1795, when he was exchanged, and became successively general-in-chief of the army of the north, inspector-general of infantry, Ambassador to Berlin in 1800, to Madrid in 1802, and count of the empire. In 1814 he was commissioned by Napoleon to organize means of defense upon the frontier, and on the Emperor's abdication was named Minister of State and Peer of France by Louis XVIII. On the return of Napoleon to Elba, he was proscribed by a special decree but was reinstated in all his dignities after the battle of Waterloo. He became marshal of France in 1816, and marquis in 1817.

**BEUST, Friedrich Ferdinand**, boist, frēdriH fėr'dē-nānd (Count von), Saxon and Austrian statesman: b. Dresden, 13 Jan. 1809; d. Altenberg, 24 Oct. 1886. He adopted the career of diplomacy, and as member of embassies or ambassador for Saxony resided at Berlin, Paris, Munich and London. He was successively Minister of Foreign Affairs (1849) and of the interior for Saxony (1853). At the London conference regarding the Schleswig-Holstein difficulty he represented the German Bund. He lent his influence on the side of Austria against Prussia before the war of 1866, was on its conclusion forced out of office by Bismarck. He entered the service of Austria as Minister of Foreign Affairs, became president of the ministry, Imperial Chancellor, and in 1868 was created count. He rendered excellent service in the reorganization of the dual monarchy. In 1871–78 he was Ambassador in London, and in 1878–82 in Paris. An English translation of his memoirs appeared in 1882.

**BEUTENMÜLLER**, boi'tĕn-mül-lėr, **William**, American entomologist: b. Hoboken, N. J., 31 March 1864. Educated in the public schools. From 1889–1910 he was curator of the department of entomology in the American Museum of Natural History. He has written admirable works on butterflies and moths, especially on those in the vicinity of New York, and contributed voluminously to scientific and popular magazines. He was president of the New York Entomological Society (1900–01) and editor of its *Journal*.

**BEUTH, Peter Christian Wilhelm**, Prussian statesman: b. Kleve, 28 Dec. 1781; d. Berlin, 27 Sept. 1853. Graduating from the University of Halle, where he had studied law, he entered the service of the government. In 1810 he was appointed director of the Board of Inland Revenue at Berlin; three years later he became a member of the Ministry of Finance, to which he was promoted on account of the reforms he had effected in the financial management of the revenue department. In 1821 he became a member of the Council of State. In 1844 he was raised to the position of acting privy councillor. He was the founder of the Industrial Institute in Berlin and of similar institutions in the provincial cities. A statue was erected in honor to his memory before the Architectural Academy.

**BEUTHEN**, boi'tĕn, Prussia, town, province of Silesia, government of Oppeln, about two and a half miles from the frontier of Russian Poland. It has steam and electric tramways, and among buildings of note are the Roman Catholic church of Saint Mary (13th century), Protestant parish church (15th century), synagogue, royal Catholic gymnasium, higher girls' school, etc. It is an important centre of mining and metallurgy, having iron-works, zinc-works, lead-works, coal mines and various industrial establishments. The town passed from the Kingdom of Bohemia into that of Prussia in 1742. Pop. 67,718.

**BEVELAND,** bā'vę-lănt, **North** and **South,** Netherlands, two islands in the province of Zealand, and formed by the mouths of the Scheldt. North Beveland lies east of the island of Walcheren, from which it is separated by a narrow channel. South Beveland, 22 miles long and 10 miles wide, the larger and more fertile, contains Goes, the capital, and several forts and villages. The united area of the islands, which have suffered much from inundations, is 120 square miles.

**BEVERAGES.** Beverages are those drinks to which mankind resorts in order that he may relieve the pangs of thirst or supply some other demand of the system. In the beginning man's life was marked by its simplicity. Our first parents were content to eat the fruits that they found so convenient for their needs and it is doubtful if they knew any other beverage than the pure water coursing through the streams that irrigated the ground. It was not until they began to eat the flesh of beasts and searched the soil for delicacies to gratify their newly awakened appetite for a variety in foods that they felt the craving of unnatural thirst. But the eating of strong meats required the drinking of stronger drinks than water and in this fact we find the origin of the history of beverages.

It would be intensely interesting if we could know in just what way prehistoric man first satisfied his unnatural thirst for drink. It is, of course, more than probable that the second beverage discovered by man was the milk of the animals he slaughtered to gratify his taste for meat. From a temperate and hygienic point of view it was not a long stride from the waters of the brooks to the milk of cows and asses and yet it stands out as a landmark in the development of the demand for variety, the demand which may be regarded as the first tendency toward civilization. It is also quite probable that, in the beginning, man drank his milk soon after it was drawn or while it was still fresh, but finally there came a day when some prehistoric investigator was bold enough to take a drink of the milk of mares that had been set aside, and from this fermented liquid learned the sensations of intoxication, for kumyss, still the favorite tipple of the Tartar, is unquestionably the most ancient of all intoxicating beverages.

To mankind, next to water, milk is still a favorite beverage, for it possesses the double advantage of being both food and drink. To the civilized taste the milk of cows is the most desirable but more barbaric taste calls for a stronger beverage and is best gratified by the milk of mares, asses, camels or even reindeers.

It is undoubtedly true that if we ate only wholesome foods in such quantities only as our system requires; performed our work with regularity; enjoyed, at proper intervals, requisite rest and recreation, and avoided all such deleterious distractions as excitement and worry, water would be the only beverage that nature would demand.

While it is the primary object of all beverages to relieve thirst nearly all of them also possess other properties that exercise more or less effect upon the body. For example, those drinks which contain the largest quantities of water pass most rapidly into the circulation, increasing the volume of blood. Diluting the food, they not only assist digestion but also aid in eliminating waste matter from the body through the ordinary channels. There are beverages that soothe and beverages that irritate, but all have their purpose. The former find their scope of usefulness in times of fever and cold, while the latter are stimulating irritants of great medicinal value.

Among the most useful beverages are those that best relieve the cravings of thirst, the sour liquids prepared from the lemon, or other fruit juices, which, while perhaps not acid in themselves, have been rendered acidulous by charges of carbon dioxide. While the carbonated and mineral waters have the greatest effect in eliminating waste matter from the system they are not so useful in this regard as the hot drinks, like tea, coffee or even hot water, for they not only play their part in the elimination of waste but also cool the body by increasing the perspiration.

Particularly soothing are such mucilaginous or gelatinous liquids as barley water, flaxseed tea and Irish moss. The mineral waters, malt liquors and light wines act with a tonic effect; the more common beverages, like tea and coffee and the milder alcoholic liquors are stimulating to the nerves, while tea and coffee, if milk and sugar are added, as well as chocolate, cocoa and the malt liquors may be classified as the nutritious drinks.

Next in popularity to milk are those unfermented beverages which are made from products of the vegetable world such as tea, coffee, cocoa and chocolate. Although cocoa is by far the most ancient of these drinks, having been in use long before the stimulating qualities of either tea or coffee were discovered, coffee has long been in greatest demand. In fact, it has been estimated that about 500,000,000 people drink coffee daily, as against the 100,000,000 who drink tea, and the 60,000,000 who partake of chocolate and cocoa. In the United States alone some 500,000,000 pounds of coffee are consumed annually, as against 90,000,000 pounds of tea, and some 20,000,000 pounds of the various preparations of cocoa and chocolate.

There are several points of resemblance between all these table drinks dissimilar as they are in appearance and flavor. In each case they exercise a stimulating effect, the caffeine of coffee and theine of tea being almost identical, while the theolronsine of chocolate and cocoa is but a slightly different principle. Each also contains the same bitter principle, tannin, and each owes its characteristic odor and flavor to an essential oil.

Coffee, which must be considered first, because of its great popularity, is the berry from the several species of the genus *Coffea,* of which *C. arabica* is the most important. First used in Abyssinia during the 9th century, it was later introduced into Arabia, and from there to Constantinople, where it had become popularized by the middle of the 16th century. It is supposed that it was Leonhard Rauwolf, a German physician, who introduced coffee into Europe in 1573. A few years later Prosper Alpinus brought some of the beans to Venice to use them as a drug, but it was many years before it was drunk to any extent outside of Constantinople. In 1652, however, a coffee house was opened in London by the Greek serv-

ant of a merchant named Edwards, whose ships sailed to the Levant, and since that time the popularity of the beverage has never waned.

In its preparation as a drink coffee should not be boiled in water, but instead, should be covered with water that has previously been boiled. Here it should be allowed to infuse for fully 10 minutes, at a temperature little below the boiling point. As coffee does not contain as great a quantity of tannin as tea and does not yield it so readily, it may infuse longer without becoming bitter and indigestible, the effect which tannin exerts if it is boiled or left for too long a time over the fire.

Like many other beverages coffee exercises both good and evil effects upon the system. Stimulating the muscles, heart and nerves, its tendency is to overcome the ills of fatigue, while its strengthening effect upon the heart's action makes it a most valuable stimulant. At the same time its action upon the nervous system is so marked that over-indulgence in the drink is certain to be attended by such ill effects as insomnia, and nervous headaches, if not palpitation and general nervous disability.

Tea, which stands next to coffee as a table beverage, is a native of China where these shrubs of the *Camellia* family have been cultivated for more than a thousand years. It was once a general belief that there were many kinds of tea plants, but Robert Fortune, the botanist, exposed the myth by his thorough investigaton of the various methods of cultivation and manufacture in use in the tea districts of China and India. It is now known, therefore, that while there are many variations in the tea plant the varieties are all the same plant cultivated under different conditions, while the two distinctive varieties, the green and the black tea, are the results of different methods of manufacture. Green tea, for example, is prepared by steaming the leaves before they have been rolled and dried, a method of procedure which produces a greater quantity of tannin.

As the flavor of tea as a beverage depends as much upon the quality of the water in which it is infused as upon the method of infusion, care should be taken to see that the water is neither too soft nor too hard, and that it has been well boiled before it is poured over the tea. The period of infusion, which is then continued at a lower temperature, should not last more than a few minutes, for the longer the infusion the greater the quantity of tannin that will be extracted.

Like coffee, tea has its good and evil effects. If infused too long it becomes bitter unwholesome and indigestible. If drunk too freely it not only induces insomnia and kindred nervous disorders but irritates the stomach, producing a serious kind of catarrh. At the same time it is a mild stimulant which refreshes the body and prepares the brain for intellectual energy. It is also beneficial in aiding one to withstand the ill effects of cold, fatigue and hunger. By producing perspiration it cools the body when heated, and, by means of its action upon the heart, it warms the body when cold.

While tea has been consumed in China and other parts of Asia since the latter part of the 6th century it was not introduced in European countries for more than 1,000 years. Pepys mentions having tasted it for the first time in 1660, but the novel beverage must have met with almost instant recognition for, less tnan 18 years later, it was in general use in every part of England.

As both cocoa and chocolate contain starch and fat in considerable quantities they are among the most nutritious of the stimulating table beverages. Both are obtained from a small evergreen tree, native to tropical countries, for while the cocoa of commerce is prepared by grinding the seeds themselves, the commercial chocolate cakes contain the better parts of the berry, usually mixed with sugar and some distinctive flavoring. The preparation of the drink is a simple process, the cocoa or chocolate merely being dissolved in milk and boiling water.

Although by no means so popular as tea or coffee the drinking of mineral waters has become so general during the past century that they must now be regarded as among the most important temperance beverages. Early in the 16th century an attempt was made to produce artificial mineral waters, but it was not until the 18th century that chemistry had made sufficient progress to enable the experimenters to prove the elementary compounds of the waters both as to quality and quantity. In fact, the first unqualified success in this line of investigation was made by Dr. Frederick Adolphus Augustus Struve, a Dresden druggist, who celebrated his achievement by opening an artificial mineral water pavilion in that city, in 1820.

The alkoline and mineral waters which are so much in use to-day owe their distinctive characteristics to the preponderance of carbonate and bicarbonate of sodium as well as to the carbonate of potassium, lithium, calcium and magnesium which they contain, all of which tend to make them useful aids to the physician in the treatment of disease. The Vichy of France, for example, or the Ems of Germany, are extensively used in the dietetic treatment, correcting disorders of the stomach and acting as alkalinizers of the blood, bile and urine. In cases of gout, gall stones, rheumatism, dyspepsia, constipation, etc., they have proved of invaluable service and have also been used successfully in the treatment of obesity. In many instances their value as medicinal agents is enhanced by the addition of carbon dioxide, while, in other cases, they are made more palatable and easy of digestion by being served with milk. Among the natural mineral waters produced in this country are those of Saratoga, N. Y., Saint Louis, Mich., and Waukesha, Wis., all of which are well and favorably known to those who make use of such beverages.

Another class of drinks, the popularity of which is beyond question, are those beverages which contain alcohol as an active principle: beer, ale, wine, cider and the many kinds of spirituous liquors that are now manufactured in almost every part of the world. In addition to the alcohol these beverages also contain such properties as tannin, sugar, carbon dioxide, or various acidulous substances, any or all of which exert an influence over the flavor of the liquid. As to alcohol itself it has so long been a bone of contention that it would be folly to attempt to review a century-long contest in a single article. Originally used exclusively as a medicine, and admittedly a valuable agent in

the treatment of certain diseases it is to be doubted if even the moderate use of such liquors as beverages is not productive of far more evil than good, while the effect of immoderate indulgence in such liquid stimulants is too well known to require further discussion. In spite of all the warnings of science, however, man continues to gratify his craving for alcoholic preparations. Even in countries where the ordinary beverages of commerce are unknown, savage taste has learned to delight in the flavor of fermented liquors, and this desire even the most barbaric people have had ingenuity enough to gratify.

Beer, or lager, as it is more generally known in this country, is by no means a modern invention and no drink has continued to maintain a more steadfast hold upon the taste of man since the earliest days of civilization. The Egyptians manufactured beer from barley many hundred years before the Christian Era. Archilochus, 700 B.C., shows that the Greeks had learned the art of brewing, while we have such eminent authorities as Sophocles and Æschylus, Diodorus and Pliny to prove that the Greeks and Romans both made beer and loved it. Like the Gauls, the Romans called it Cerevisia, from Ceres, the goddess of field fruits, and there is ample history to prove that the art of making this beverage was known to man fully as early as the art of making wine from the grape. Prior to the invasion by the Romans the Britons were drinkers of milk and water although they occasionally drank mead, an intoxicating beverage made from honey. As Tacitus tells us that beer was the ordinary drink of the Romans, and beer and vinegar the favorite beverage of the soldiers of Julius Cæsar, it is not difficult to imagine why, so soon after his invasion, the Britons became a nation of beer-drinkers. Unlike the Romans, however, they employed wheat instead of barley in their malting. In Germany, too, beer was introduced at a very early date. Charlemagne loved it dearly and not only compelled the best brewers in the land to become attachés of his court, but gave his personal attention to the subject so conscientiously that he was able to tell them how to improve their brew. As early as 1482 the monasteries of that country began to make beer and, by the 16th century, that beverage had become one of the chief exports of the country. In fact, the German brewer has always been recognized as one of the best beer makers of the world and it has only been within the past century that the success of their Austrian rivals has had a tendency to somewhat eclipse their glory. Centuries ago beverages known as beer were made in England by tapping such trees as the birch, maple, spruce and ash for their juices, or by resorting to the properties contained in ginger and other roots, a practice which not only still prevails in that country, but that was brought to America by the first colonists, who loved these humble, harmless drinks too well to leave their recipes in the motherland.

Ale and porter, the heavier malted liquors which are so much used in England and the United States, cannot boast such ancient lineage as beer, but still there is reason to believe that it was a beverage like ale on which the Anglo-Saxons and the Danes loved to become drunken, and, fully as early as the reign of Henry II, the monks of England had become famous for their wondrous brews. In fact, it was due to the investigations of some of these fathers of the monasteries that the superior quality of the waters of Burton-on-Trent for brewing purposes was discovered, a discovery that has made the ales and porters of England world celebrated.

Wine, whose history is as old as that of civilization, is the most aristocratic of drinks. Ascribed to the gods by the ancients—to Dionysus by the Greeks, Bacchus by the Romans and Osiris by the Egyptians.— there can be no question but that the use of the juice of the grape as a beverage was one of the first discoveries of civilized man. It is true that the very ancient Romans did not know it at the time when even the Israelites had learned the secret of its production, but, later, wine-making in Rome became such a general enterprise that Emperor Domitian ordered half of the vineyards destroyed that the more necessary wheat might be raised in the place of the grape.

According to the best authorities Asia was the country in which the vine first grew without the aid of man, while Armenia and eastern Pontus were the lands in which the cultivation of the grape was first undertaken. From there the love of wine spread rapidly through all the lands of ancient civilization. Among the best known Asiatic wines was that of Chalybon, near Damascus, the beverages with which the tables of the Persian kings were constantly supplied, while the most famous Greek wines came from such places as Chios and Lesbos.

In ancient India and in Egypt priests were forbidden to drink, while the Jewish priests were only forbidden on days of religious services. In fact, the Hebrews were by no means as strict about the use of the wine cup as were some other nations and the fact that vine-culture was one of their favorite occupations is proved by history, both biblical and profane. Traditions state that it was the Phœnicians, the earliest of vine-growers, who carried the secret of wine making to Spain, Italy and France. They also established large vineyards on the islands of Chios, Mitylene and Tenedos.

As early as 550 B.C. the process of blending selected wines was known to the Carthaginians, while the ancient practice of adding turpentine to the wine for the purpose of preserving it was probably an invention of Italy. France, Spain, and Portugal are now the chief centres of vine-culture although the grape-growers in many parts of the United States, and particularly in the far Western States, have recently raised the making of wine to the dignity of a greater American industry. Champagne, however, one of the most popular of wines, is a beverage of extremely modern invention when compared to other makes. Invented by Dom Perignon of Hautvillers about the beginning of the 18th century its use has become more and more general until it is now consumed by wine-lovers in all parts of the world. If wine is the most aristocratic, whisky may be designated as the most democratic of drinks. Thoroughly cosmopolitan in character, in various countries it is distilled from various substances, but always, whether it is made from barley, corn, wheat, rye, or even from potatoes, it bears the same name and usually enjoys the same proportion of

popularity. The word "whisky" is a name that was bestowed upon this beverage by the Celts of Ireland and Scotland who began to make it about the middle of the 17th century. The word itself is a corruption of the Gaelic "uisge" (water), and closely interpreted means "strong water." In the beginning this drink was used almost exclusively as medicine but as soon as it had become introduced as a beverage it became a favorite drink throughout Great Britain, and while the word "whisky" once referred only to the Scotch and Irish drinks of that name, the rye and Bourbon whiskies of American manufacture are now consumed almost as generally as those made from recipes that have been handed down from the days of the ancient Celts.

Almost as strong as whisky, brandy, the "brande-vin" or burnt wine, is a drink which is often used, both for medicinal purposes and as a beverage. Its name, as is indicated, was derived from the method of its manufacture, a formula for liquor making that has been followed for many generations and in many parts of the world. In Morocco the Jews use the refuse of the grape as well as such fruits as raisins, figs, dates and pears in its distillation, and they have become strongly attached to their strange drink because they believe that their freedom from that terrible disease, elephantiasis, always so common among the Mohammedans in that country, is due to the fact that they partake so freely of this unique spirit. Molière, in his travels, discovered a tribe on the Barbary coast which made excellent brandy from honey; in Persia it is the lees of the weaker sorts of wines that are distilled, and almost every country has its particular method of making this beverage. None of them, however, can compare in quality to the cognac of France, that rich distillation from wines which alone properly bears the name of "brandy."

Gin is another distilled liquor. It is made from rye, grain and malted barley, flavored with juniper-berries and sometimes with turpentine. It is also known as Hollands, and as Holland gin, these names being a relic of the days when the beverage was called Holland-Geneva, the word "gin" being a corruption of the word "Geneva." Although originally made in Holland it was soon introduced into England where it immediately became one of the most popular of drinks. Easily manufactured and always strong it could be sold so cheaply that it was finally found necessary to adopt strict legislative measures restricting its sale and consumption. Hogarth's horrible picture, 'Gin Lane,' which was one of the influences in bringing about the much needed reform, is said to have been but slightly an exaggeration of the actual conditions which existed in all the large English cities during the reign of gin.

Rum, formerly spelled as the French still spell it, "rhum," is a spirit which is distilled from the sugar-cane juice, from the skimmings of the juice from the boiling house, or from the molasses mixed with the lees of former distillations. Although not so commonly used as some of the other strong liquors rum has been known both for its medicinal value and as a beverage ever since its introduction from the West Indies, more than a century ago.

The following are among the drinks which are not so generally known but which are in common use among the people of other countries:

Arrack, a drink manufactured widely in the East and West Indies, is much used by the natives. In making it it is sometimes distilled from the fermented juice of the palm tree, and sometimes from a combination of rice and molasses used in connection with the palm-tree juices.

Vodka, which is the chief source of intoxication in Russia, is a liquor which may be distilled either from rye or from potatoes.

In several parts of the world the sap of trees is called into reqisition to satisfy the thirst for intoxicants. Pulque, for example, the beverage most commonly used in all Spanish-American countries, is made from the fermented sap of the aloe, while a somewhat different drink, called Tepache, is made by mixing sugar and water with this sap of the aloe, which afterward is allowed to ferment for a few hours only. In Tasmania the so-called "cider-tree" furnishes the bushmen with a means of intoxication. In this case the sap is of such a character that it may be drunk as soon as it is drawn from the tree, in which state it is both refreshing and harmless, but when it is allowed to stand for some time it becomes an intoxicant of great potency.

The Soma of the Hindus is supposed by some to have been the original intoxicant of the human race. The Persians, who accept this tradition, revere the beverage as Haoma, while in India it is looked upon as the beverage of the mighty god, ever-giving new strength and new vigor. It is a milky fluid which is found in the climbing bindweed, and, when properly fermented, is extremely "heady."

Sake, the commonly used distilled liquor of Japan, is made entirely from rice, as also is Samshee, a drink used by the lower classes in China.

Kvass is the name of a sour beer much favored by the Russian peasantry. It is made from barley and rye, by a similar malting process as that applied to the manufacture of beer.

The natives of South America have a drink which they call Guarapo, which is made from the fermented juice of the sugar-cane.

Chi-chi is the name of a peculiar kind of cider which is made by the natives of Patagonia. In brewing it, in the autumn when the apples are ripe, they dig large pits which they line and interline most carefully with hides in order that none of the juice may soak into the earth. Into these hides they throw the ripe apples which are left to decay and ferment until they are ready for use. It is then extremely intoxicating.

A drink called Kephir is drunk by the natives of the Caucasus. It is an effervescing milk-like liquid, the effervescence being caused by the introduction of horny, yellowish-brown masses called "Kephir-grains." Kern, who made a scientific examination of these grains, discovered that they were made of a rod-like bacterium and a yeast-like substance that was entirely unknown to him. Not unlike Kumyss in appearance and in taste, Kephir is far more intoxicating.

Kava, or ava, is a Polynesian drink which is made by macerating in water a portion of the root and stem of one of the piperaceæ.

There are several substitutes for tea in use in various parts of the world. In some of the Pacific Islands there are "tea-trees," while the natives of Tibet are very fond of their "brick tea," which is made from the offscourings and dust of the leaves and stems of the tea plants. It derives its name from the fact that the dust is pressed into hard, solid, brick-shaped lumps, from which pieces are chipped off as they are to be used.

**BEVERIDGE, Albert Jeremiah,** American lawyer: b. Highland County, Ohio, 6 Oct. 1862. He was brought up on a farm in Ohio; was graduated at De Pauw University in 1885, and engaged in law practice in Indianapolis. He entered political life in 1883, and soon won a reputation as an effective orator. On 17 Jan. 1899, he was elected United States senator for Indiana, as a Republican. Soon after his election he went to the Philippine Islands; made a thorough study of political and material conditions there; and, on the assembly of Congress in December following, delivered a thrilling speech in the Senate in support of the administration's policy concerning the new possessions in the East. In 1906 he introduced an amendment to the Agricultural bill providing for closer inspection of the meat-packing industry. He became one of the leaders of the new Progressive party in 1912. He wrote 'The Russian Advance' (1903); 'The Young Man and the World' (1905); 'The Meaning of the Times' (1907); 'Americans of Today and Tomorrow' (1908); 'Pass Prosperity Around' (1912); 'What is Back of the War' (1915).

**BEVERIDGE, William,** English divine: b. Barrow, Leicestershire, 1637; d. Westminster 1708. He studied at Saint John's College, Cambridge, devoting his attention particularly to Oriental literature. In 1658 he published a work on Eastern tongues, especially Hebrew, Chaldee, Syriac, Arabic and Samaritan, accompanied with a Syriac grammar. In 1660 he took orders, and obtained the vicarage of Ealing in Middlesex, where he wrote a useful 'Introduction to Chronology.' In 1672 he was appointed to the rectory of Saint Peter, Cornhill, London, and the same year published his 'Synodicon' in two folio volumes, containing the Apostolic canons, decrees of the councils received by the Greek Church, and the canonical epistles of the early Fathers. This work called forth an opponent, to whom Beveridge replied in a 'Vindication.' In 1674 he obtained a prebend in Saint Paul's, and in 1681 was appointed archdeacon of Colchester. In 1684 he became prebendary of Canterbury, and in 1688 was appointed chaplain to William and Mary. Shortly after, the see of Bath and Wells was offered him; but as it had become vacant by the conscientious refusal of Bishop Ken to take the new oaths, Beveridge, to his honor, declined to accept it. The episcopal dignity, however, was only delayed; in 1704 he became bishop of Saint Asaph. Among his best-known works are 'The Church Catechism Explained'; 'Private Thoughts upon a Christian Life'; and 'The Great Necessity and Advantage of Public Prayer and Frequent Communion.' Collective editions of his works were published in 1824 and in 1842-46. Consult Burnet's 'Own Times'; and the 'Life' by Horne.

**BEVERLEY, Constance de,** in Scott's poem 'Marmion,' a nun who for love of Marmion follows him in the disguise of a groom, and on being thrown over by Marmion is immured at Holy Isle for breach of her vow of chastity.

**BEVERLEY, Robert,** American historian: b. Virginia 1675; d. 1716. He was educated in England and about 1697 became clerk of the Council of Virginia and had charge of the records of the colony. He was the author of a 'History of the Present State of Virginia,' published in 1705, a most interesting account of the details of the daily life in colonial Virginia. A reprint was published in Richmond in 1855.

**BEVERLEY, Saint John of,** English divine: b. about the middle of the 7th century at Harpham, Yorkshire; d. Beverley 721. He was educated at Canterbury under Archbishop Theodore, and became a monk under Hilda in the monastery founded by her at Whitby. In 687 he was appointed to the see of Hexham, and in 705 was transferred to York. He founded a convent of nuns at Beverley, and built the choir of the church there. He resigned his bishopric and retired to Beverley in 718. Bede, who is said to have been his pupil, speaks of him with great veneration. He was canonized in 1037, and his remains were placed in a costly shrine, in Beverley Minster. His fame was so widespread that when William the Conqueror led his army to the north and ravaged the country he saved the town of Beverley out of respect to the memory of the bishop. In 1416 Archbishop Chicheley ordered the anniversary of his death to be celebrated as one of the festivals of the Church, and special privileges were conferred on his church at Beverley by several English sovereigns. He is said to have written an 'Exposition of Luke' and 'Homilies on the Gospels.'

**BEVERLEY,** England, municipal borough and the principal town in the East Riding of Yorkshire, eight miles north-northwest of the city of Hull and a mile from the river Hull. It stands on the eastern edge of the Wolds, and on a branch of the Northeastern Railway, and consists of a principal street above a mile in length, and several minor streets, all spacious and tolerably well built. Its most remarkable edifice is the minster of Saint John the Evangelist, in the early English, Decorated and Perpendicular styles, and one of the finest specimens of ecclesiastical architecture in the kingdom, its west front in the opinion of excellent authorities surpassing in magnificence that of York Minster. The choir contains the celebrated Percy shrine, of chaste and exquisite workmanship. Other churches are Saint Mary's and Saint Nicholas. The grammar school is so old a foundation that its date is unknown. Among the other chief buildings are the guildhall and corn exchange. The chief manufactures are leather, iron castings, agricultural implements, whiting, linseed oil and cake, manures, wagons and ale. Its environs abound with beautiful walks. It sent two members to Parliament until merged in one of the divisions of Yorkshire in 1885. Pop. 13,654. Consult Hiatt, 'Beverley Minster' (1900).

**BEVERLY,** Mass., city in Essex County, on the Boston & M. Railroad, two miles north of Salem. It was founded 14 Oct. 1668; was incorporated as a city 23 March 1894; contains several villages; and is connected by trolley lines with Salem, Peabody, Gloucester and Wenham. It is a popular summer resort. It is the distributing station for the products of the Texas oil fields, a regular line of steamers plying between Beverly and Port Arthur, Tex. The government is vested in a mayor and council. It is the seat of the New England Institute for the Deaf and Dumb; is principally engaged in the manufacture of women's boots and shoes, and leather; has considerable shipping and fishery interests; contains high and graded schools, a public library, a national bank, a number of handsome residences belonging to Boston business men; and has a property valuation exceeding $16,000,000. Pop. 20,000.

**BEVERLY'S FORD,** Va., scene of a sharp cavalry fight during the Civil War, between Buford, Pleasanton and Gregg, commanding 9,000 Federals, and Stuart leading 12,000 Confederates. Hooker had sent Pleasanton to find Stuart, who was said to be near Beverly's Ford. Pleasanton planned to surprise the Confederates, but his plan miscarried. Stuart was fully prepared for him. Pleasanton was badly beaten. This action is also known as the battle of Brandy Station.

**BEVIS OF HAMPTON, Sir,** a legendary English knight who has been made the hero of mediæval romances by both English and Continental writers. He was the son of Sir Guy, Earl of Hampton, who was treacherously murdered by Divoun, Emperor of Almayne, and was given by his false mother to some heathen merchants to be sold for a slave among the Paynim. By them he was carried to Ermony, where he soon became dear to King Ermyn, and dearer still to his only daughter, the lovely Josian. His chief exploits were the overthrow of Brademond of Damascus, of a monstrous boar, of the giant Ascapard, whom he spared to become his squire, and of a dreadful dragon near Cologne. His famous sword "Morglay" he won in battle; his horse "Arundel" was the gift of Josian. Still more romantic episodes in his story are his carrying his own death-warrant in a sealed letter to the vassal Brademond; his escape from his noisome dungeon after seven years' imprisonment; and recovery of his wife.

**BEWICK,** bū'ĭk, **Thomas,** English wood-engraver: b. Cherryburn, Northumberland, 12 Aug. 1753; d. Gateshead, 8 Nov. 1828. He early showed a great talent for drawing, and was apprenticed to an engraver in Newcastle. The celebrated Dr. Hutton, of Woolwich, then a schoolmaster in Newcastle, was preparing his great work on mensuration, and having employed Bewick's master in getting up the wood-cuts for illustrating it, the execution of these was entrusted to the young apprentice. Bewick performed the work so admirably that his master advised him to turn his attention to wood-engraving, and accordingly with this view he proceeded to London. He returned, however, to Newcastle after a short time, and established himself there in partnership with his former master. His turn of mind led him to the study of natural objects, more especially animals. In 1779 appeared his edition of 'Gay's Fables'; in 1784 'Select Fables'; in 1789 his large wood cut the 'Chillingham Ball,' one of his most ambitious works; and in 1790 appeared his 'History of Quadrupeds,' the beauty of the illustrations of which attracted universal attention, so superior were they to anything hitherto produced by the art of wood-engraving. In 1797 appeared the first, and in 1804 the second volume of his 'British Birds,' generally regarded as the finest of his works. Bewick has never been surpassed in his spirited delineations of animals and the admirable naturalness with which the accessories and backgrounds of the drawings, such as foliage, grass, and other rural objects, are represented. The tail-pieces to chapters throughout his works are of the highest excellence, and often display a rich vein of humor. His illustrated edition of 'Æsop's Fables' appeared in 1818. He was the reviver of the art of wood-engraving; he was one of the earliest to cut upon the end of the wood instead of along it; and he invented what is technically called the "white line" in wood-engraving. Consult his 'Memoir' (London 1846); Clement, 'Painters, Sculptors, Architects, and Engravers' (Boston 1899); Dobson, 'Thomas Bewick and His Pupils'; Linton, 'Masters of Wood Engraving' (London 1899); and Thomson, D. C., 'Life and Times of Thomas Bewick' (ib. 1882).

**BEWLEY, Anthony,** American abolitionist: b. Tennessee, 22 May 1804; d. Fort Worth, Tex., 13 Sept. 1860. A Methodist clergyman opposed to slavery in 1843 he entered the Missouri Conference. When the slavery question rent the Church, he adhered at first to neither side, but earned his livelihood at manual labor. He re-entered the Church in 1848 and at once launched forth against slavery. In 1858 he was driven from Texas for preaching according to his convictions. Against the advice of friends he returned in 1860, but remained only a few weeks, being again obliged to flee for his life. A reward of $1,000 was offered for his apprehension; he was seized in Missouri, carried to Fort Worth, and there hung by the mob, the only reason for whose act was that he had maintained human slavery to be unjust.

**BEY,** bā, among the Turks, signifies a governor of a town, seaport or small district. The Turks write the word beg (q.v.). It is often applied to superior military officers, sea captains and to distinguished foreigners.

**BEYER,** bī-ĕr, **Samuel Walker,** American geologist: b. Clearfield, Pa., 15 May 1865. He graduated at Iowa State College, 1889, and at Johns Hopkins University 1895. He is professor of geology and mining engineering in Iowa State College since 1898, and vice-dean of the engineering division since 1908. As special assistant on the Iowa Geological Survey he has prepared reports on the geology of Boone, Marshall, Story and Hardin counties, and annual reports on the mineral productions of the State. In 1897 he was a delegate to the International Geologic Congress at Saint Petersburg. He is assistant geologist of the United States Geological Survey since 1901, specializing in economic geology. He is the author of 'Clays and

Clay Products of Iowa' (1903); 'Quarries and Quarry Products of Iowa' (1906); 'Road and Concrete Materials in Iowa' (1907); 'Peat Deposits in Iowa' (1908), all published in Iowa Geological Survey reports.

**BEYERLEIN, Franz Adam,** German novelist and playwright: b. Meissen, 22 March 1871. He is a graduate of Freiburg and Leipzig. He became suddenly famous in 1903 on the production of his play 'Zapfenstreich,' which dealt with conditions in the German army and caused a strong sensation. It was translated into English and produced in the United States under the title 'Taps.' His other works are 'Jena Oder Sedan' (1903, Eng. trans. 1913); 'Dämon Othello' (play, 1895); 'Similde Hegewalt' (1904); 'Der Grossknecht' (1905); 'Stirb und werde' (1910); 'Das Wunder des heiligen Terenz' (1911).

**BEYERS, Christian Frederick,** South African general: b. 1869; d. 8 Dec. 1914. A lawyer by profession, he enlisted as a private soldier in the Boer army during the South African War (1899–1902) and rose to the rank of assistant commandant-general for the northern district. His principal achievement was the capture of the British camp at Nooitgedacht; he was also chairman of the congress that met at Vereeniging to draft the peace terms. He afterward became speaker of the legislative assembly of the Transvaal and appeared to have become reconciled to the incorporation of the republics by Great Britain and the establishment in 1906 of the Union of South Africa. He had also visited Germany and been received by the Kaiser; "from that honor he had never recovered." At the outbreak of the European War Beyers was commandant-general of the Defense Forces of the Union, a post he resigned early in September 1914. Together with General Kemp, a former lieutenant of Delarey's and a good soldier, he proceeded to stir up disaffection in the western Transvaal. He was joined by Gen. Christian De Wet, Col. S. G. Maritz and General Delarey. A certain local preacher, Van Rensburg, had "prophesied" that Germany was the agent appointed of God to purify the world; he "beheld visions" and saw an angel perched on the Paardekraal monument and announced that Delarey, De Wet and Beyers were the leaders destined to restore the old republic. A number of irreconcilables flocked around the plotters, all determined to throw in their lot with Germany. On the night of 15 Sept. 1914 Delarey and Beyers were speeding in an automobile from Johannesburg when they were challenged by a police patrol. As they failed to stop, a shot was fired which glanced off the car and killed Delarey, whose intentions with regard to the proposed rebellion have never become known. Beyers formed a command and threatened Pretoria, while De Wet operated in the Orange Free State. General Botha, the Premier, quickly raised 30,000 burghers and fell upon Beyers and Kemp so fiercely that their forces were scattered in all directions. Beyers fled across the Vaal into the Orange Free State, lost 400 men in a fight and just escaped himself, making for German territory via Bechuanaland. De Wet was defeated and taken prisoner; Kemp and the "prophet" preacher crossed into German Southwest Africa, and Beyers was defeated at Bulfontein. On the morning of 8 December he encountered a body of Union troops and was driven toward the Vaal River. Beyers and some companions attempted to cross; midway in the stream his horse failed and he slipped from its back to swim. He tried in vain to get rid of his heavy coat, which hampered his movements. One of those with him heard him cry, "I can do no more" as he disappeared beneath the swollen flood. Two days after his body was recovered.

**BEYLE, Marie-Henri,** bāl, mā-rē-ŏn-re (pseudonym DE STENDHAL), French author: b. Grenoble, 23 Jan. 1783; d. 23 March 1842. He was educated at Grenoble and at Paris, and for a time gave much attention to painting, studying under Regnault. He held civil and military appointments under the empire; took part in the Russian campaign of 1812; thence until 1821 lived at Milan, chiefly occupied with works on music and painting. After nine years' residence in Paris he became in 1830 consul at Trieste, and in 1833 at Civita Vecchia. In 1841 he returned to Paris, and during the following years made several excursions in France, England and Italy. He wrote under various pseudonyms articles which appeared in French and English periodicals. The distinguishing feature of his works was the application of acutely analytic faculties to sentiment in all its varieties, his best books being the treatise 'On Love' (1822); 'The Red and the Black' (1830); 'History of Painting in Italy' (1817); 'Racine and Shakespeare' (1827), and 'Life of Napoleon,' etc. A collective edition of his works appeared in 18 volumes in 1855–56, and his 'Correspondance Inédite' in two volumes in 1855. Consult Colomb, 'Notice sur la vie de M. Beyle' and the article by Mérinée in *Revue des deux Mondes* (15 June 1843).

**BEYRICH, Heinrich Ernst,** German geologist and palæontologist: b. Berlin, 31 Aug. 1815; d. there, 9 July 1896. He was appointed professor of geology and palæontology at the University of Berlin, also serving as assistant director of the Prussian Geological Survey. While in the latter position he supervised the preparation of the 'Geological Chart of Prussia and the Thuringian States.' Aside from that he did much original research work. Among his important works are 'Beiträge zur Kenntnis der Versteinerungen des rheinischen Uebergangsgebirges' (Berlin 1837); 'Untersuchungen über die Trilobiten' (2 vols., Berlin 1846); 'Konchylien des norddeutschen Tertiärgebirges' (Berlin 1853–57); 'Uber einige Cephalopoden aus dem Muschelkalk der Alpen' (Berlin 1867). His wife was also a well-known writer of children's stories under the pen name Klementine Helm.

**BEYROUT.** See BEIRUT.

**BEYSCHLAG, Adolf,** German musician: b. Frankfort 1845. Orchestral conductor, Treves and Cologne 1868–80; director of the Philharmonic Society in Belfast and Leeds. Appointed royal professor, Berlin 1907. Composed songs, pianoforte dances, and wrote 'Die Ornamentik der Musik' (Leipzig 1908).

**BEYSCHLAG, Willibald,** German theologian: b. Frankfort 1823; d. 1900. He studied theology at Bonn and Berlin, became minister in Coblenz 1850; vicar at Treves in 1856 and

court chaplain at Karlsruhe. In the last-named place he took an active part as a defender of ecclesiastical régime against the liberal agitation. He was one of the founders of the *Deutschevangelische Blätter* and a prominent organizer of the Evangelical Alliance for the protection of German Protestant interests. In 1860 he was appointed professor of practical theology at Halle. During a long career of politico-religious controversy he wrote a number of Protestant theological works, among them a 'Life of Jesus,' 'Christology of the New Testament,' 'Melancthon and the German Reformation,' and published a collection of sermons.

**BEZA**, bē'zą or **DE BEZE**, dė bāz, Theodore, Calvinistic divine: b. of a noble family at Vézelay, in Burgundy, 24 June 1519; d. 13 Oct. 1605. He was educated in Orleans under Melchior Volmar, a German philologer devoted to the Reformation; and, early familiar with the ancient classical literature, he became known at the age of 20 years as a Latin poet by his petulant and witty 'Juvenilia' (a collection of poems of which he was afterward ashamed). In 1539 he was made a licentiate of law, and went to Paris. He received from his uncle the reversion of his valuable abbey Froidmond, and lived on the income of two benefices and on property which he inherited from a brother. Wit, scholar and poet, his habits were dissipated, but a clandestine marriage in 1543 recalled him from his excesses, and a dangerous illness confirming the intention which he had formed at Orleans of devoting himself to the Reformed Church, he went to Geneva with his wife in 1547. He accepted a Greek professorship at Lausanne in 1549. During his 10 years in this office he wrote a tragi-comic drama in French,—'The Sacrifice of Abraham' (1550)—which was received with much approbation; delivered lectures (which were numerously attended) on the Epistle to the Romans and the Epistle of Peter (which served as the basis of his Latin translation of the New Testament, of which he afterward published several editions); finished Marot's translation of the Psalms in French verse, and obtained to such a degree the confidence of the Swiss Calvinists that he was sent in 1558 on an embassy to the Protestant princes of Germany to obtain their intercession at the French court for the release of the Huguenots imprisoned in Paris. In the following year he went to Geneva as a preacher, and soon after became a professor of theology and the most active assistant of Calvin, to whom he had already recommended himself by several works, in which many of the views of that eminent theologian were advocated with great zeal and no small measure of ability, so that he was generally regarded as Calvin's ablest coadjutor and the person destined to be his successor. His talents for negotiation, which were distinguished, were now often put in requisition by the Calvinists. He was sent to the court of Anthony, King of Navarre, at Nerac, to obtain toleration for the French Huguenots; and at his desire he appeared, 1561, at the religious conference at Poissy, where he spoke in behalf of his party with a boldness, presence of mind and energy which gained him the esteem of the French court. He often preached in Paris before the Queen of Navarre and the Prince of Condé; also in the suburbs. At the conference of Saint Germain, in 1562, he spoke strongly against the worship of images, and after the commencement of the civil war accompanied the Prince of Condé as chaplain, and on the capture of the Prince joined Admiral Coligny. After the restoration of peace he returned to Geneva in 1563, where, besides discharging the duties of his offices, he continued to engage in theological controversies in support of the Calvinists; and after Calvin's death in 1564 became his successor, and was considered the first theologian of this Church. He presided in the synods of the French Calvinists at La Rochelle (1571) and at Nimes (1572), where he opposed Morel's proposal for the alteration of clerical discipline; was sent by Condé (1574) to the court of the Elector Palatine; and at the religious conference at Montpellier (1586) opposed the theologians at Würtemberg, particularly James Andreas. At the age of 69 years he married his second wife (1588), and still continued to repel, with the power of truth and wit, the attacks and calumnies which his enemies, apostatized Calvinists (such as Bolsec), Lutherans and Jesuits, heaped upon him. They reported in 1597 that he had died, and returned before his death to the Roman Catholic faith. Beza, now 78 years old, met his assailants in a racy poem full of youthful enthusiasm, and resisted in the same year the attempts of Saint Francis de Sales to convert him and the alluring offers of the Pope. In 1600 he visited Henry IV in the territory of Geneva, who presented him with 500 ducats. Among his many works, his exegetic writings are now very little read, but the able and correct 'History of Calvinism in France from 1521 to 1563,' which is ascribed to him, is still much esteemed. Beza's name is associated with the Codex which he presented to the University of Cambridge, for an account of which see BIBLE. Consult the 'Life' of H. M. Baird (New York 1899).

**BEZALEL**, in biblical history, a son of the Jewish clan Pahath-Moab (Ez. x, 30). Another bearer of that name was the chief architect of the Tabernacle, expressly called by Jehovah to superintend the work of erection, decoration and furnishing of the "tent of meeting." He taught the arts of his craft to his assistants, the chief of whom was Aholiab.

**BEZANT**, a round, flat piece of pure gold, without any impression, supposed to have been at one time the current coin of Byzantium. Bezants are frequently employed as one of the charges in heraldry, a custom supposed to have been introduced by the Crusaders. Its value was about $2. For a long time after the Crusades it was current in England and on the Continent. Bezants are common in the arms of banks and of individuals who have been connected with money. Figures, similar to bezants, when not colored, are in heraldry known as roundels.

**BEZBORODKO, Alexander Andreyevitch, Prince**, Russian soldier and statesman: b. Little Russia, 25 March 1747; d. St. Petersburg, 17 April 1799. Having graduated from the theological seminary at Kiev, he decided to devote himself to a military career and entered the army, where he rose rapidly in rank.

In the Russo-Turkish War he was second in command to the field marshal. In 1774 he entered the civil service. Six years later he was appointed secretary of the council on foreign affairs. His abilities attracted the attention of the Empress Catherine II, whose private adviser he became. In this unofficial position he acquired a strong influence in matters of state policy. After the coronation of Paul in 1796 he was appointed to the highest office in the empire, Imperial Chancellor. Two years later he was instrumental in effecting an Anglo-Russian alliance against France. He was also largely responsible for the third partition of Poland. He was one of the very few men who were able to retain the favor of Tsar Paul throughout that capricious monarch's entire reign.

**BEZIERS,** bā-zē-a, France, town in the department of Hérault, 38 miles southwest of Montpellier; situated on a height above the Orb, and on the Canal du Midi, a few miles from the Mediterranean, to which there runs a tramway line. It is surrounded by old walls, and though its streets are narrow, it is tolerably well built. Its most conspicuous edifice is the cathedral, a Gothic structure, crowning the height on which the town stands, and possessing a fine semi-cicular choir surrounded by columns of red marble. The city has a communal college, a museum, a library, and a society of economics and archæology. Its manufactures consist chiefly of woolens, silks, hosiery, chemicals, spirits, parchment, gloves, glass, soap, leather and confectioneries, etc. It has also extensive brandy distilleries and is the centre of most of the trade of the district. Béziers was from immemorial times a fortress town, first Gallic, then Roman. It was during the Roman occupation named first Beterræ, then Beterra Septimanorum, and was the station of the 7th Legion, and still contains Roman remains. It is historically interesting in connection with the massacre of the Albigenses, when its inhabitants were indiscriminately put to the sword to the number of over 20,000 by Simon de Montfort and the papal legate, for having afforded protection to the fugatives in 1209. It suffered also in the religious wars of the 16th century. Pop. 51,042.

**BEZIQUE,** a card game which crystallized into official form in 1887. Two packs of cards are used, two players participate and the cards rank, ace high, then ten, king, queen, knave, nine, eight and seven. All cards below that are discarded from both packs. Eight cards are dealt to each player. Trumps may be determined either by turning up the first card of the stack or by the suit of the first marriage. The non-dealer leads for the first trick, and the winner of each trick has the succeeding lead. After each trick, each player draws one card from the top of the stack, the winner of the trick taking the top card. The playing is as in whist, the leader taking the trick unless his opponent plays a higher card of the same suit or a trump. It is not necessary to follow suit until the stack is exhausted, when one must do so and take each trick, if possible. Counting is done by means of the values of the cards; each ace or ten-spot taken in a trick counts 10, the winner of the last trick of each hand scores 10, and if the trump is turned, both sevens count 10 for the turner, and if one exchanges from his hand a seven of trumps for another turned trump or if one declares the other seven of trumps 10 more is scored. The game is won by the player who first makes 1,000 points, and if his opponent has not made 500 the game counts double. There are certain combinations of cards other than the above, which, when declared, count as follows: Double bezique (both queens of spades and both knaves of diamonds), 500; sequence of five highest trumps, 250; any 4 aces, 100; any 4 kings, 80; any 4 queens, 60; any 4 knaves, 40; bezique (queen of spades and knave of diamonds), 40; royal marriage (king and queen of trumps), 40; marriage (king and queen of same suit), 20. A declaration is made by placing the declared cards face up on the table where they remain till played or the stack is exhausted, except in the case of the seven of trumps. To score, a declaration can only be made after winning a trick and before drawing, and but one declaration can be made at a time. After a card has been used in one combination it may be used to form another, excepting when used to form an equal or inferior combination in the same class as before. A player need not declare a combination which he holds and only before the stack has been exhausted can a declaration be made. Consult A. Howard Cady's treatise for details and rules.

**BEZOAR,** concretions found in the fourth stomach of many of the *herbivora,* notably goats, at one time held in high repute because of fancied miraculous healing properties.

**BEZOBRAZOV, Vladimir Pavlovich,** biĕ-zō'brä-zof, Russian political economist and publicist: b. 3 Jan. 1828; d. 29 Aug. 1889. He received his education in the Imperial Aleksander College. In the governmental service he spent a few years in almost every department and finally became a senator. In recognition of his activities in the field of political economy the Academy of Science awarded him the honor of regular membership. He became a lecturer in political economy at the Imperial Aleksander College and gave also private instruction, in that subject, to Grand Dukes Aleksyei and Serge Aleksandrovich, Nikolay and Konstantin Konstantinovich. In recognition of these services he was awarded the order of Alexander Nevski. In the course of many years the imperial government availed itself of Bezobrazov's practical knowledge of finance and political economy. In these fields he had an opportunity of applying effectively his own theories which bear largely the stamp of Adam Smith. In his pamphlets on 'Inspections of Factories' he severely critized the established order of things in the industrial institutions of the empire. As a statesman and a politician he was a moderate Liberal. Disregarding constitutional problems he severely attacked the formalism and bureaucratic methods then common in Russian home affairs. In his noteworthy treatise on 'Government and Society' (1882) he laid stress on the indispensability of an organic link between the local governments and the central power. It was upon his initiative and under his supervision that the *Sbornik Gorudarstv Znania* (*Magazine of Political*

*Sciences*) was established and published for six years (1874–80).

**BEZOLD, Karl,** German philologist: b. Donauworth, 18 May 1859. He pursued his studies in the universities of Leipzig, Munich and Strassburg, after which he became, in 1883, lecturer at Munich. In 1888 he received an appointment in London to lecture at the British Museum. This position he held until 1893, when he was appointed professor and director of the Oriental seminars at the University of Heidelberg. In 1908 he became privy councillor. Among his original works are 'Catalogue of the Cuneiform Tablets in the Kouyunjik Collection of the British Museum' (London 1889–99); 'The Tell el-Amarna Tablets in the British Museum' (1892); 'Oriental Diplomacy' (1893); 'Nineve und Babylon' (3d ed., 1909); 'Die Babylonischen-assyrischen Keilschriften und ihre Bedeutung für das Alte Testament' (1904); 'Festschrift für Ignatz Goldziher' (in 'Zeitschrift für Assyriologie und Verwandte Gebiete,' 1912).

**BEZOLD, Wilhelm von,** German meteorologist: b. Munich, 21 June 1837; d. 1907. After graduating from the University of Göttingen he was appointed professor at the University of Munich, later shifting over to the Technical Institute in the same city. In 1885 he was appointed professor of meteorology at the University of Berlin, where he at the same time became director of the Meteorological Institute, lately established. He has conducted some valuable and original researches in the field of thermodynamics. Among his writings are 'Die Farbenlehre im Hinblick auf Kunst und Kunstgewerbe' (1874); 'Die Kälterückfälle im Mai' (1883); 'Zündende Blitze im Königreich Bayern' (1884); 'Zur Theorie des Erdmagnetismus' (1897); 'Ergebnisse der Meteorologischen Beobachtungen' (48 vols., 1885–1902). Consult Hellman's 'Wilhelm von Bezold, Gedächtnissrede' (1907).

**BEZOUT, Etienne,** French mathematician: b. Nemours 1730; d. Paris 1783. His writings, which attracted much attention in his time, contained important contributions to the theory of elimination. He was also one of the first mathematicians to recognize the value of determinants. His best known works are 'Théorie générale des équations' (Paris 1779); 'Cours complet de mathématique' (Paris 1780).

**BEZSONOV, Peter Alexeyevitch,** Russian writer on Slavic folklore: b. Moscow 1828; d. 1898. He studied at the University of Moscow, where he devoted five years to ancient and modern languages. In 1864 he was appointed supervisor of the Vilna Museum and Public Library, becoming at the same time director of public education in the same city. This position he held three years, after which he became librarian at the University of Moscow. In 1879 he was appointed professor of the Slavic languages at the University of Kharkov, where he remained for the rest of his life. His works include 'Bulgarian Songs' (1855); 'Serbian Folk Songs' (1857); 'Russian Folk Songs' (1861).

**BEZZENBERGER, Adalbert,** German philologist: b. Cassel, 14 April 1851. Graduating from the University of Munich, where he had made a special study of Indo-Germanic languages, he became lecturer at the University of Göttingen. In 1879 he was appointed professor of Sanskrit at the University of Königsberg, becoming rector in 1890. His works include 'Beiträge zur Geschichte der Litauischen Sprache' (1877); 'Litauische Forschungen' (1882); 'Lettische Dialektstudien' (1885); 'Über der Sprache der Preussien Letten' (1888); 'Die Kurische Nehrung und ihre Bewohner' (1889); 'Sitzungsbericht der Altertumsgeschichte Prussia' (1892); 'Analysen Vorgeschichte Bronzen Ostprussia' (1904); 'Beiträge zur Kunde der Indogermanischen Sprachen' (1877–1906).

**BHAGALPUR,** b'hä-găl-poor', city of Hindustan, in Bengal, capital of a district and division of the same name, situated on the Ganges, 113 miles northwest of Moorshedabad and 265 miles northwest of Calcutta by rail. The situation is unhealthy; malaria is endemic and cholera is epidemic. Tejnarayan Jubilee College (established in 1887) is maintained almost wholly by fees. The city is the headquarters of the troops for keeping in check the Sonthal tribes. In the town and neighborhood are some interesting Mohammedan shrines; and there are here also two monuments, one erected (in 1780) by natives and the other erected by government in memory of Augustus Cleveland, the conciliator of the formerly turbulent and marauding hill tribes of Sonthals. There are several indigo works in the neighborhood. Pop. about 75,-275. The division of Bhagalpur lies between that of Rajshahi on the east and that of Patna on the west. It has an area of 19,776 square miles. Pop. (1911) 8,144,821. The district of Bhagalpur is fertile, well watered and highly cultivated. Cereals, pulses, tobacco, cotton, indigo, opium, flax, hemp and sugarcane are the principal products and there is a large trade by river and rail with lower Bengal. It is divided into two unequal portions by the Ganges. Area, 4,226 square miles; pop. 2,139,318.

**BHAGAVADGITA,** bhä'gă-văd-gē'tą (Sanskrit, "the Divine Song"), the title of a religious-philosophical didactic poem interwoven as an episode in the great Indian epic of the Mahâbhârata (q.v.). The leading theme of the poem which is divided into three sections, is the exaltation of the god Vishnu in his human form or avatar of Krishna, and throughout the god speaks in his own person. In the incarnation Vishnu became the character of Arjuna, a chief of the Pandus, who were then at war with their kinsmen the Kurus. On the eve of battle, when Arjuna is appalled at the thought of slaughtering his own kindred, Krishna sets before him the duties demanded of him as a member of the warrior caste, and at the same time propounds an eclectic system of philosophy of an ethical pantheistic type, laying especial emphasis on the doctrine of *bhakti*, or faith in the Supreme Being, whom he declares himself to be. There are translations in English by Davies (1882); Telang in 'Sacred Books of the East,' Vol. VIII (Oxford 1898); Thompson (1855), and Wilkins (1875).

**BHAIRAVA**, b'hī'rava, a Sanskrit word signifying "fear" and "terrible," one of the many names applied to Siva. Though the name as applied in this sense is of ancient origin, the worship of Siva under the separate form of Bhairava is a later development in Hindu mythology, and some 10 or 12 forms are regarded as objects of worship chiefly by the Mahrattas. There are various designations of Bhairava, the most popular apparently being "Bhairava the Dog," "Bhairava the Black" and Svásva, the latter having a female consort named Bhairavi. This modern character is not connected with Siva, but is derived from Bhairon, the village god, originally a "peasant godling," who rose through successive stages and became the only form of Siva recognized by some communities in northern India. The confusion over the two distinct gods arose from the accidental resemblance of their names and the attributes of the greater were transferred to the smaller deity by his worshippers, with the result that it is now impossible to distinguish the attributes or characteristics of one from the other. See SIVA.

**BHAMO**, bha-mō', India, town of Burma, on the upper Irrawaddy, about 40 miles from the Chinese frontier and 180 north-northwest of Mandalay, with which it has railway communication. About 20 miles above Bhamo the river suddenly narrows from 1,000 to 150 yards and flows through a rocky gorge subject to eddies and back-waters. Navigation is at that point very difficult and at times impossible. It was formerly the capital of a Shan principality and was a large and flourishing city, but fell into decay. It is, however, important as the chief mart of the trade with China, through western Yun-nan. A British consulate at Manwyne, Yun-nan, since 1893, has greatly facilitated commercial intercourse. The imports are woolens, cottons and silks, which are brought chiefly by caravans. It has a considerable trade with the tribes of the neighborhood, who exchange their native produce for salt, rice and a sauce made of dried fish. It is at the head of navigation on the Irrawaddy, and steamers connect it with Rangoon. Pop. 9,762.

**BHANG**, bäng, (1) an Eastern name for common hemp (*Cannabis Indica*). (2) A narcotic made from Indian hemp. The large leaves are smoked with or without tobacco, or are chewed or made into a drink by the addition of cold water.

**BHARTPUR**, bhĕrt-poor', or **BHURTPORE**. (1) A native state of India with an area of 1,961 square miles. The surface is generally low and the state is scantily supplied with water; soil generally light and sandy; chief productions, corn, cotton, sugar and salt. It has been under British protection since 1826. Pop. (1911) 558,785. (2) A town, the capital of the above state, on an extensive and fertile plain, 110 miles south-southwest of Delhi. It covers an area about four miles in circuit, and was so strongly fortified that in 1805 it stood a siege by Lord Lake of 14 weeks and cost the besiegers 3,100 men. In a second siege, in 1826, its resistance to Lord Combermere was less successful. The fortifications have been demolished, but the fort still exists, and is enclosed by a wet ditch and a wall of hewn stone, which taken together are 60 feet high. Within the fort is the Rajah's palace, built of red and yellow freestone in the Mogul style, and picturesquely crowning an eminence surrounded by flower-gardens and fountains. The population (1911) was 33,918, about one-half that for 1881, the decrease in that period having been 48.7 per cent, due to many causes, such as poverty, famine and emigration.

**BHARTRIHARI**, bhär-trę-hä'rę, Indian poet, author of a book of apothegms. According to the legend he was the brother of King Vikramâditya, who lived in the 1st century B.C. The collection of 300 apothegms (short poems) bearing his name is divided into three parts, and present us with graceful descriptions of nature, charming pictures of love, shrewd remarks on everyday life and profound thoughts on the Deity and the immortality of the soul. Bhartrihari was the first Indian writer who became known in Europe, 200 of the apothegms having been translated by the missionary Abraham Roger and published at Leyden (1653). His actual personality has been much discussed without any very satisfactory conclusion having been reached. The weight of opinion inclines to belief in his existence, and that he was a poet of a philosophical cast, possibly a grammarian also, and very likely of royal descent. Consult Von Bohlen, 'Bhartrihari's Sententiæ' (1833); Tawney, 'Two Centuries of Bhartrihari' (1877); Wortham, 'Translation of the Satakas of Bhartrihari' (1886); More, 'A Century of Indian Epigrams, Chiefly from the Sanskrit of Bhartrihari' (1898); Kale and Gurjar, 'Nitisataka and Vairagysataka, with Notes and an English Translation' (1898).

**BHASKARA**, surnamed ACHARYA, the Learned, Hindu astronomer and mathematician: b. 1114; date of death unknown. He was the sixth successor of Brahmagupta, at the head of the college of astronomy of Ujjain. His chief work was the 'Siddhantasiromani' ('Crowning of the Star System'), which, like all his works and those of his contemporaries, was written in verse. He differed from them in adding prose comments and explanations.

**BHATTI**, bhät'tę, Indian epic poet of the 6th or the 7th century. His poem, named after him, 'Bhattikâvyam,' is in 22 cantos. Its theme is the deeds of Râma; but the author designed the work to be also an exemplification of the rules of grammatical and rhetorical composition. It was published with a two-fold commentary at Calcutta (1828).

**BHAVABHUTI**, bhä-va-bhoo'tę, surnamed SRĪ-KANTHA, Indian dramatist, of the latter part of the 7th and first part of the 8th century. He wrote at least three plays, the 'Mahâviracharita' ("life of the great hero") and the 'Uttararâmacharita' ("later life of Râma"), forming together, in seven acts each, a dramatized version of the story of the Ramayana, and the 'Malati-madhava' (the Hindu Romeo and Juliet), a domestic drama in 10 acts. Bhavabhûti is often compared with Kâlidâsa, whom he equalled in vigor and variety, but hardly in genius. All three plays have been translated into English. Consult Frazer, 'Literary History of India' (London 1907); Horwitz, 'The Indian Theatre' (ib. 1912), and Levi, 'Le théâtre indien' (Paris 1890).

**BHILS,** bēls, or **BHEELS,** a Dravidic race inhabiting the Vindhya, Satpura and Satmala Hills, a relic of the Indian aborigines driven from the plains by the Aryan Rajputs. They appear to have been orderly and industrious under the Delhi emperors, but on the transfer of the power in the 18th century from the Moguls to the Mahattas they asserted their independence, and being treated as outlaws took to the hills. Various attempts to subdue them were made by the Gaekwar and by the British in 1818 without success. A body of them was, however, subsequently reclaimed, and a Bheel corps formed, which stormed the retreats of the rest of the race and reduced them to comparative order. The hill Bheels wear little clothing and live precariously on grain, wild roots and fruit, vermin, etc., but the lowland Bheels are in many respects Hinduized. Their total numbers are about 1,250,000. Their religion contains much superstition, including the worship of Mother Amba Bhavani. Their language belongs to the Kolarian stock of Indian tongues, but many of them speak a dialectic Aryan. Consult Rowney, 'Wild Tribes of India' (1882); Reclus, 'Primitive Folk' (1891); Crooke, 'Natives of Northern India.'

**BHIMA,** bē'ma, **BEEMAH,** or **BIMAH,** (1) a god in Hindu mythology, the son of Pritha (or Kunti) by Vayu, the god of the wind, remarkable for his great size and strength; (2) the name of a river of India rising in the Poona district of Bombay and flowing southeast to the Kistna River, about 400 miles in length.

**BHIWANA,** bhę-wä'-nę, India, a town in the Punjab, district of Hissar, 55 miles west of Delhi. It is the trading centre of its district, exporting metals, sugar, salt and spices. Pop. 31,100.

**BHOPAL,** bhō-pal', India. 1. A native state of central India, with an area of 6,874 square miles. The country is full of jungles and is traversed by a hilly tract, forming part of the Vindhya Mountains. The soil is fertile, yielding wheat, maize, millet, pease and other vegetable productions peculiar to central India. Sugar, tobacco, ginger and cotton are the chief exports. The district is well watered by the Nerbudda, Betwa and other minor streams. The state of Bhopal was founded by an Afghan adventurer named Dost Mohammed Khan, who in 1723 succeeded in establishing himself here by the countenance of Aurungzebe, on whose death he assumed the title of nabob, which was retained by his successors. Bhopal has all along been friendly in its relations with the British. In 1818 the state was placed under British protection. Pop. 1,375,317; (2) a town, capital of the above state, on the boundary between Malwah and Gundwana, 108 miles east of Oojein. It was defended successfully in 1813 against the forces of Scindia and the Rajah of Nagpore. It is surrounded by a wall two miles in circuit and contains a fort. Outside is another fort on a large rock, the residence of the ruler of Bhopal. Among other buildings of note are two mosques, arsenal, mint and the palace of the Begum. Large artificial lakes supply good water. The town is clean, has fine promenade gardens and is well lighted. Pop. 56,000.

**BHRIGU,** a Sanskrit word signifying "radiant," "sparkling." A mythical race of men or demigods mentioned in the 'Rig Veda' (q.v.). They are connected with fire, which is brought to them and first kindled by Matari-svan and afterward given by the Bhrigu to men. They are also said to fabricate chariots. Bhrigu is likewise the name of one of the chief Brahmanical families and also of Varuni, author of one of the Rig Veda, being enumerated among the 10 Maharshis created by the first Manu. The name of Bhrigu is furthermore borne by one of the Prajapatis produced from Brahma's skin; by one of the seven sages; by the father of Cyavana; by the author of a Dharma shastra; by an ancient astronomer, a physician, of the planet Venus and a number of other persons and things. The Bhrigu myths of the Rig Veda and the Mahabharata are believed to be merely a more developed form of the tradition regarding the descent of fire and some authorities identify Bhrigu with Agni. Consult Monier-Williams, Sir M., 'Sanskrit-English Dictionary' (Oxford 1899). See SANSKRIT LITERATURE.

**BHUJ, or BHOOJ,** India, chief town of Cutch in India, Bombay presidency, at the base of a fortified hill, with military cantonments, high school and school of art, mausoleums of the Raos or chiefs of Cutch, pagodas, etc., including a temple dedicated to the cobra di capello. Bhuj is famous for its manufactures of gold and silver. Pop. 21,579.

**BHUTA WORSHIP,** in Indian (Hindu) mythology: bhuta (the word is plural) are evil spirits or goblins who kill the living and breathe life into the dead. The myth has existed from the earliest ages and in later periods the god Siva (q.v.) was recognized as the chief of the bhuta. Hence, Siva is also called Bhutapati—"Lord of the Bhuta." These spirits are worshipped and propitiated by many non-Aryan tribes in India, in temples and houses, under the forms of animals, such as boars, tigers, pigs; of human beings in gaudy dress, or of stones and pyramidal mounds of earth. Blood sacrifices are offered to the bhuta, especially gray pigs, black hegoats or fowls; also rice soaked in blood. The ceremony is performed with wild dances accompanied by tom-toms. In the south of India the people recognize the amiable Bhuta Kannimar, or virgin spirits. Bhut-Bali are offerings to malignant spirits; Bhuta-Devata is an evil being worshipped as a divinity; Bhut-khet is a piece of land granted for the cost of sacrifices. A Hindu purificatory rite is called Bhuta Shuddhi; in this connection, however, Bhuta signifies the four elements.

**BHUTAN,** bhoo-tän', an independent state in the eastern Himalayas, with an area of about 16,800 square miles, lying between Tibet on the north and Assam and the Jalpaiguri district on the south and consisting of rugged and lofty mountains, abounding in sublime and picturesque scenery. Pop. (estimated) 250,000. The climate varies with the elevation and extremes of heat and cold may be experienced in a day's journey. Some portions of the territory are fertile and produce corn, rice, wheat, buckwheat, mustard and cardamoms. Cattle and considerable numbers of a

peculiar breed of ponies are raised. The manufactures, which are primitive and intended for home consumption, include coarse blankets, cotton cloth, swords, daggers and other weapons and agricultural implements. The Bhutanese are a hardy and vigorous race, of Tibetan stock, and their language is a dialect of Tibetan. They profess to be Buddhists, but their religion, like that of Tibet, partakes largely of the old Böm-po, which preceded Buddhism and consists chiefly of devil worship and propitiatory sacrifice. The administration of the state is divided between the secular Deb rajah, who is elected for a term of three years by the penlops, or magnates, from their midst, and the Dharma rajah, the presumed reincarnation of Buddha, who is supposed to interest himself solely with the spiritual control of the state. The winter capital is Punaka, or Dosen, a strong natural fortress 96 miles east-northeast of Darjeeling; Trashichödzong is the summer capital. Bhutan formerly included considerable tracts of territory now included in Bengal and Assam, which were annexed in 1864 and 1866 by the British government in retaliation for outrages committed by the natives. In 1865 they drove the English out of Dewangiri and a punitive expedition was sent against them. A treaty concluded with the Bhutan government provided for the payment by the Indian government of an annual subsidy in return for formal cession of the annexed territory. This subsidy began at £2,500 and was gradually increased to £3,333; it is conditional upon the maintenance of peaceful relations.

**BIAFRA, Bight of,** a large bay on the west coast of Africa, at the head of the Gulf of Guinea, between Capes Formosa and Lopez. Its breadth is about 190 miles. The principal rivers flowing into it are the Niger, the New and Old Calabar rivers, the Rio del Rey, the Kamerun and the Gaboon; its islands are Fernando Po (Spanish) and Saint Thomas' and Prince's (Portuguese). Opposite Fernando Po are the Kameruns.

**BIALYSTOK,** byäl-ę-stōk', Russian Poland, or **BIELOSTOK,** town in the province of Grodno, on the Bialy, 45 miles south-southwest of Grodno, with which and Warsaw it is connected by rail. It is a well-built, handsome town, with a spacious market, gymnasium and several churches and has among its edifices a palace which belonged to the counts of Braniski and was once known as the Polish Versailles. Its manufactures are woolen goods, leather, hats, soap, etc. The town was founded in 1320 and became part of Russia after the third partition of Poland. Pop. about 80,000.

**BIANCAVILLA,** byän-ka-vēl'la (Italian *bianca,* white, and *villa,* town), a city of Sicily situated on the slope of Mount Etna, 20 miles northeast of Catania, founded in 1480 as an Albanian colony. Lava is employed for paving its streets and in its neighborhood are the noted grottoes of Scila and Archi, the former basaltic, the latter in the lava of 1607 with a tunnel half a mile in extent. Wine and grain are produced in the district and all the cotton in this portion of Sicily is called Biancavilla.

**BIANCHI,** byän'kę, **Francesco** (called Il Frari), Italian painter: b. Modena 1447; d. 1510. He was the instructor of Correggio, according to Vidriani, and his works were esteemed for graceful design and agreeable coloring. His works, however, have all the traditional dryness of the period and the eyes are painted in a manner somewhat grotesque. Among his few works extant are a 'Madonna with Saints,' now in the Louvre. He must not be confounded with Federigo Bianchi, a Milanese artist, born about the end of the 16th century. The paintings of the latter are numerous in northern Italy and are held in high esteem. He wrote a volume of biographies of painters. Consult Lancilotti, 'Cronaca Modenese'; Vedriani, 'Scultori ed Architetti Modenesi'; Winckelmann, 'Neues Malerlexicon.'

**BIANCHI-GIOVINI, Aurelio,** Italian journalist and historian: b. Como, 25 Nov. 1799; d. Naples, 16 May 1862. His early studies were adapted to the purpose of following a commercial career, but he took up the profession of journalism in Switzerland, where he had gone to escape the persecutions of the Austrian police. For some years he was editor of various Swiss-Italian newspapers. In 1841 he began his more serious work, writing a number of historical works in Milan and Turin. During this time he became a member of the Chamber of Deputies. His principal works are 'Biografia di fra Paolo Sarpi' (1834); an incomplete history of the Popes (12 vols., 1850-64); 'L'Austria in Italia' (2 vols., 1854). His biography has been written by Montazio (Turin 1862).

**BIANCHI AND NERI,** Italian, *White and Black:* Parties or factions in the Florentine Republic in the 14th century. Dante belonged to the Bianchi, and, being banished, wrote his great "Divina Commedia" in exile.

**BIANCHINI,** bę-an-kē'nę, **Francesco,** Italian antiquarian and astronomer: b. Verona, 13 Dec. 1662; d. Rome, 2 March 1729. He was intended for the clerical profession and to this end studied theology, jurisprudence, languages, mathematics and botany in Padua. Afterward he repaired to Rome and applied himself to jurisprudence and continued the study of experimental physics, astronomy, etc., as well as of Greek, Hebrew and other languages. Pope Alexander VIII bestowed on Bianchini a rich benefice, with the appointment of tutor and librarian to his nephew, the Cardinal Pietro Ottoboni. Pope Clement XI also patronized him and appointed him secretary to the commission employed in the correction of the calendar. Being on a tour through France, Holland and England, he formed the idea of drawing a meridian in Italy, from one sea to the other, in imitation of that which Cassini had drawn through France. He was occupied eight years at his own expense in that work; but other employments withdrew his attention from it, and it remained unfinished. He concluded his career with two important works (1727) on the planet Venus, and on the sepulchre of Augustus. He is the author of several memoirs and dissertations on antiquarian and astronomical subjects, including 'Istoria universale provata co' momenti, e figurata co' simboli degli antichi' (Rome 1697), and 'Astronomicæ et Geographicæ Observationes Selectæ' (edited by

his nephew, Verona 1737). An edition of Anastasius, 'De Vitis Romanorum Pontificum' was begun by him and completed by his nephew, Guiseppe Bianchini (4 vols., Rome 1718–34). There is a monument to the memory of Francesco Bianchini in the cathedral of Verona.

**BIANCO, Andrea,** Italian cartographer who lived in Venice in the beginning of the 15th century. It has been asserted that he had a knowledge of America previous to Columbus, for among his charts is one dated 1436, in which are indicated two islands, one "Antillia," the other "De laman Satanaxio," located in the Atlantic Ocean west of the Azores. His maps are now rare and are valued as illustrating the knowledge, or ignorance, of geography then prevalent.

**BIANCONI, Charles,** Italo-Irish promoter of transportation: b. Tregolo, Italy, 24 Sept. 1786; d. Tipperary, September 1876. At 15 or 16 he was bound for 18 months to a countryman, who took him to Dublin, where he was sent out to vend cheap prints. Soon he removed to Waterford and started on his own account as itinerant vendor. In his long pedestrian journeys he was led to envy those of his own calling who could afford to drive. He engaged in other enterprises, all of which were successful, and in July 1815 he started a one-horse, two-wheeled car to carry passengers, goods and the mail-bags from and to Clonmel and Cahir, a distance of about 10 miles. The experiment succeeded and grew apace, so that in 1845 Bianconi was conveying passengers and freight over 1,633 miles and working daily 3,266 miles of road. His cars were patronized by all classes and were of great benefit in opening up communications with remote districts. Between 1846 and 1865 the growth of railways forced the discontinuance of the Bianconi service on 4,534 miles, but during the same period it was extended over 3,594 miles in routes crossing the railways and reaching districts remote from the new mode of conveyance by rail. Bianconi was the friend and supporter of O'Connell, and on the occasion of a visit to Rome he erected at his sole cost the monument over O'Connell's heart in the church of the Irish College. In 1863–65 he disposed of his vast interests on liberal terms to his agents and others employed by him and then retired to his estate at Longfield, near Cashel, Tipperary. Consult O'Connell, Mrs. Morgan John, 'Charles Bianconi: A Biography' (Dublin 1878).

**BIARD, François Auguste,** byär, â-güst frŏñ-swä, French genre painter: b. Lyons, 30 June 1799; d. near Fontainebleau, 20 June 1882. He traveled extensively, visiting Spain, Greece, Syria, Egypt, Mexico, Greenland and Spitzbergen, Brazil, etc. Among his best known pictures are the 'Babes in the Wood' (1828); the 'Beggar's Family' (1836); the 'Combat with Polar Bears' (1839), and 'The Strolling Players,' now in the Luxembourg. A strong element of caricature runs through most of his works.

**BIARD, Pierre,** French missionary in America: b. Grenoble 1565; d. 17 Nov. 1622. He was one of the first two missionary priests sent to New France. With his companion, Masse, he arrived at Port Royal 22 May 1611, and on 11 June wrote the earliest letters sent by the Jesuit order from Canada. He at once began a study of the Indian languages with a view to their conversion,—a task of extraordinary difficulty, as the Indians had no symbols which could express either moral or religious ideas. He established friendly relations with the Indians on the Kennebec in 1612, and in the same year composed a Micmac catechism. Owing to the hostility of the colonists to the Jesuits, the missionaries left Port Royal and founded a settlement on Mount Desert Island, near the mouth of the Penobscot. The colony was soon destroyed by the forces of Argall, deputy governor of Virginia, and Biard, being captured, was sent to England. This enterprise of Argall's marks the actual beginning of hostilities between the French and English in North America. Biard was liberated after a short time, and returning to Lyons, became a professor of theology and afterward chaplain of the King's forces. He published, in 1616, 'Relation de la Nouvelle France, et du voyage des pères Jésuites dans cette contrée.' This is the earliest of the 40 volumes of 'Jesuit Relations' (1632–72), which are such valuable storehouses of material for early American history. Consult Hughes, 'History of the Society of Jesus in North America' (Cleveland 1910).

**BIARRITZ,** byą-rĕts, France, a fashionable watering place, department of Basses-Pyrénées, five miles south of Bayonne. It is a favorite of bathers and other persons who come from all parts of Europe, and especially of the Basque mountaineers, who deem it an obligation to drink of the mineral waters once a year, as well as to bathe in the sea of Biarritz. In 1856, the place acquired additional importance from being made the summer residence of Napoleon III and his court. Since then its popularity, both in winter and summer, has steadily increased. It has no industries and is composed almost entirely of hotels and lodging-houses. Pop. 18,260. Consult Laborde, 'Encore le vieux Biarritz' (1909).

**BIART,** byär, **Lucien,** French novelist, poet and writer of travels: b. Versailles, 21 June 1829. He published a number of novels, containing masterly descriptions of Mexican nature and customs. Among his works are 'Les Mexicaines,' 'La Terre Chaude,' 'A travers l'Amérique,' and (in 1885) 'Les Aztèques,' an interesting historical study. He died in Paris 18 March 1897.

**BIAS,** bē'ąs, one of the seven wise men of Greece: b. Priene, one of the principal cities of Ionia, about 570 B.C. He was the son of Teutames, was a practical philosopher, studied the laws of his country, and employed his knowledge in the service of his friends, defending them in the courts of justice or settling their disputes. He is said to have died at an advanced age immediately after successfully defending in court one of his friends. The inhabitants of Priene having resolved to abandon the city with their property, Bias replied to one of his fellow-citizens, who expressed his astonishment that he made no preparations for his departure — "I carry all that is mine with me." Many of the stories attributed to him are of doubtful authenticity. A number of his short, pithy sayings have come down to us.

Consult Mullach, F. W. A., 'Fragmenta Philosophorum Græcorum.'

**BIBAUD, Michel,** French-Canadian poet and historian: b. near Montreal 1782; d. 1857. He published in 1830 a volume of poems, 'Epîtres, Satires, Chansons, Epigrammes,'—the first miscellany of poems in the history of French-Canadian literature. He afterward published in three volumes the 'Histoire du Canada.' This work, however, was not well received by his compatriots, being written from the British rather than the French-Canadian standpoint.

**BIBB, George M.,** American jurist: b. Virginia 1772; d. Georgetown, D. C., 19 April 1859. He was graduated at Princeton in 1792 and took up the practice of law in Kentucky. He was twice chief justice of the State Court of Appeals; served two years in the State senate and was chancellor of the Court of Chancery. He was a senator in Congress, 1814–19 and 1829–35 and Secretary of the Treasury under President Tyler. During later life he practised his profession in Washington, D. C. He compiled 'Reports of Cases at Common Law and in Chancery in the Kentucky Court of Appeals' (1808–11).

**BIBBIENA,** bę-byā'na, **Bernardo Dovizio da** (styled BIBBIENA), Italian poet: b. Bibbiena, 4 Aug. 1470; d. 9 Nov. 1520. For many years secretary to Cardinal Giovanni de Medici, in whose election as Pope Leo X he is said to have had a considerable share, he was appointed treasurer and soon after raised to the dignity of cardinal (1513). He conducted a successful campaign against Urbino and in 1518 was legate to France for the purpose of securing concerted action of the Christian nations against the Turks. He translated several plays of Plautus, which were performed before the Pontifical court. He was an ardent promoter of art and science. His comedy, 'Calandria,' is probably the earliest in Italian literature. Consult the biography by Bondini (Leghorn 1578); Camerini, 'Nuovi profili letterari' (Milan 1875); Flamini, 'History of Italian Literature' (New York 1906); Graf, 'La Calandria' (1878); Wendriner, 'Die Quellen von Bernardo Dovizis Calandria' (1895).

**BIBBIENA, Giuseppe,** Italian painter: b. 1696; d. 1757. The most distinguished of the Bibbiena family, he was famed as architect as well as an artist. Not only did he design gorgeous decorations for a court wedding at Munich in 1722 and a dazzling court festival in Prague in 1723, but he built the noted theatre at Bayreuth in 1757 and remodeled the opera house at Dresden. The 'Architettura e Prospettire' (1740) contains several illustrations of his works. Consult Nagler, 'Neues Allgemeines Künstler-Lexicon.'

**BIBERACH,** bē'bĕ-räH, Würtemberg, a town on the river Riss, an affluent of the Danube, 22 miles south-southwest from Ulm. It is 1,750 feet above sea-level, is irregularly built and with its old walls, still in part remaining, and its old towers and gateways, has a mediæval aspect. Among its buildings is a fine church, dating from 1100 and recently restored. The town has important educational institutions and a richly endowed hospital. The French, under Moreau, defeated the Austrians near Biberach on 2 Oct. 1796; and again 9 May 1800 the Austrians suffered defeat at the hands of Saint-Cyr. There is a monument to the poet Wieland, who was born in the vicinity. The town is noted for its bell foundries and manufactures of artificial flowers, leather, toys and machinery. Its grain and fruit markets are famous. The gas works and waterworks are the property of the town. Pop. 9,096.

**BIBESCO, Barbo Demetrius,** also known as PRINCE STIRBEY, Wallachian statesman: b. 1801; d. Pisa, Italy, 13 April 1869. In 1817 he went to study in Paris where he remained until 1821 when he returned to his native land. He participated in the uprising against the Greek officialdom established in Rumania under the Turkish government. Under the provisional government established under Russian protection he accepted the portfolio of Minister of the Interior. He is considered one of the founders of the modern Rumania.

**BIBIKOV,** bē-bē'kof, **Vasili Ilich,** Russian actor, dramatic critic and playwright: b. 1747; d. 1787. He was the secret councillor of the Imperial court. From his earliest boyhood he manifested a passionate love for the theatre as also a remarkable dramatic verve which did not escape the eye of his future guide and teacher, A. Sumarokov. It was with the aid of that great master that Bibikov originated the theatrical art in Russia by establishing, upon the invitation of Empress Catharine II, the Imperial Theatre in Saint Petersburg. He was the first director of that company and as such has deserved an immortal name. But he was even more celebrated as founder of the first Academy of Drama in Saint Petersburg (1779) which became the nursery-garden of Russian actors. No smaller fame did he deserve as author of a comedy in five acts 'Likhoimetz' (The Usurer) which was performed with immense success in all the theatres in Saint Petersburg. It is obvious, however, that he had been familiar with Molière's masterpiece, 'L'Avare,' but the elaboration and the dialogue are essentially Russian in character. The subject matter of the comedy has been taken from the contemporary customs of the metropolis, which he had satirized in a powerful manner, and the characters of the play are drawn with vigor so that, in its time, 'The Usurer' was considered, and is now to a great extent, one of the best *comédies de mœurs* ever written in Russian.

**BIBLE, The. Introduction. The Name.** —The Phœnician port of Gebal, the modern Jebel, famed as seat of the Adonis cult and still earlier as a mart for papyrus, was called Byblos by the Greeks, whence the Greek word *byblos* or *biblos* came to denote the papyrus plant (as we say *barège* or *nankin*) and its inner pith, then the paper made therefrom, then a book or writing (Matt. i, 1, first used to denote a body of sacred writ in the Letter of Aristeas, 316). Thence the diminutive *biblion* with its plural *biblia* (often *byblion, -a*), meaning *papers, little books, books, documents, scriptures, library.* In the preface to Ecclesiasticus (written in Hebrew about 172 B.C. by Joshua Sirach, turned into Greek and prefaced by his grandson Joshua about 117 B.C.) this *biblia* is used twice . . .

"of the Law and the Prophets and the other Biblia" . . . "also the Law and the Prophecies and the rest of the Biblia" . . . to denote the literature of Israel, as the equivalent and in fact a translation of the Hebrew *S'farim* (scriptures) used in the same era in the same sense in Dan. ix, 2, "I Daniel understood from the *s'farim*." From the Jews this term passed, along with so much other freightage of thought and word, to early Christians (first in 2 Clem. to Cor. xiv, 2), by whom it was at last extended to include all authoritative scriptures, Jewish and also Christian. In the Middle Ages this Greek neuter plural was mistaken for a Latin feminine singular and so declined: *biblia, bibliæ*, etc. As such it has passed over into various languages of modern Europe (the Bible, die Bibel, la Bible, la Bibbia, etc.).

**Other Names.**— *S'farim* or *biblia* was by no means the only term applied by Jew or Christian to the scrolls in question. At first all Israel's literature was regarded as holy, if not quite equally so, merely as being written* — such was his preoccupation with religion — and not till the Middle Ages do the Jewish expounders (never the Talmud or Midrash) speak of the "Scriptures Holy" (*sifre ha-qodesh*). When other books appeared, they received the special suffix "the outsiders" (*ha-chitzunim*), the Greek "*Apokrypha*" ("hidden away"),— perhaps as not included in Temple or Synagogue libraries. As read publicly on Sabbaths and holidays, the books were named: (a) *Miqra*, "the read"; also (b) "writings the holy" (*kith'be ha-qodesh*), a title reappearing in Rom. i, 2 (*graphais hagiais*) and in 2 Tim. iii, 15 (*hiera grammata*). Again, the superflous "holy" omitted, they were called (c) simply *Writ* (*katub*), and the modern phrase "the Scripture says" merely translates the Hebrew *ha-katub 'omer*, as the "every scripture" of 2 Tim. iii, 16 translates *kol ha-katub*. Once more (d) since "Law" (Torah) was the first and chief division of these "Books," the term is applied to the whole, as also in John x, 34, 1 Cor. xiv, 21. (e) The name "Testament" (Old and New), translating the Greek *diatheke* (covenant), first used in this sense in 2 Cor. iii, 14, the most familiar to us, very naturally is rarely if ever used by a Jew to mean "Scripture"; the "Book of Covenant" or Testament (*sefer habrith*) denotes the whole "Law" in Ben Sirach xxiv, 23, but properly only Ex. xx, 20–xxiii, 35. (f) Still other less important designations are found: as Cycle (*machzur*), "Twenty and Four Books," "Verse"; often an acrostic was formed with the Hebrew initials (*t-n-k*) of Law, Prophets, Writings, and of other designations. (g) Lastly, in the Mishnah the mark of the Holy Books is that they "defile the hands," which sounds like a tabu, but in any case the phrase "defiling the hands" came to define the "Holy Books" as *canonical*.

**Division of the Subject.**— In discussing this authoritative literature, the question is first, What are these various Scriptures?; then, what is their actual literal content?; and lastly, what is its meaning (or interpretation)? The first question, in all its ramifications, concerns the *Canon;* the second, the *Text* and textual criticism; the third, the *History of Interpretation* and so-called "Higher Criticism." These topics, then, will be discussed in this order. As is well known and has already been observed, the whole literature falls into two grand divisions: the Old Testament and the New, or Jewish and Christian Scriptures, and these, being wide apart, will require separate and distinct treatment.

*The Chinese are said to regard as holy all writing (Calquhoun's 'China in Transformation,' p. 246), perhaps as possibly containing the name Confucius.

## Canon of the Old Testament.

**Terms.**— Both the word and the idea of *Canon* appear to be Semitic. The Assyrian *qanû*, Hebrew *qaneh*, Greek *kanna*, along with the English *cane* and many others, all mean *reed*, whence the Greek *kanon* meant a rod or bar used to keep a thing straight or right; thus Homer calls the arm-rods of Nestor's shield *kanonas* (Il. viii, 192f).* Thence *kanon* came to mean a *straight-edge*, thence *rule, norm, standard, model;* thence *canons* or *canonical biblia* came to denote Scriptures accepted as authoritative, as the *rule* of faith and practice, whether prescribing or prescribed. All this, however, is Christian; the Jews employed no such term, but instead of it the names already mentioned, to designate their regulative literature. This latter, of course, came into being gradually, indeed very gradually, and for many generations no question was raised as to the authoritative or unauthoritative character of any particular "Writing," for no such distinction arose into consciousness. Nor was there, for many years, perhaps hundreds, any collection of writings into a single body; but in the 2d century B.C. there may be discovered traces more or less distinct of such an assembling. In 2 Maccabees ii, 13ff we read: "and there were related in the records and the memoirs of Nehemiah the same things, and how he, founding a library, collected the biblia concerning the kings and the prophets and those of David and the letters of kings concerning offerings" (anathemas). But especially this part (i, 2–ii, 18) of this book (dated by Niese 124 B.C.), namely, the letters recommending the temple-consecration, ostensibly from Palestinian Jews to their brethren in Egypt, is admittedly late and untrustworthy, and its statements may be only enlarged inference from the actual mention in Nehemiah of the book of the Law (viii, 8), the book of the Chronicles (xii, 23), "the commandment of David" (xii, 24), and letters of King Artaxerxes to governors and others, touching (among other matters) the gift of timber for the gates, etc. (ii, 7–9), as well as earlier alleged proclamations of Cyrus, Darius, Artaxerxes, prescribing the offering of gifts for restoration of the temple, letters ostensibly copied in Ezra (i, 2–4, vi, 6–12, vii, 12–26). (Consult Wellhausen's 'Bleek,' ed. iv, p. 559f, and König's 'Einleitung,' 442f, for opposite judgments.) But we may detect here some faint hint of a triple or quadruple segmentation of a body of literature generally accepted but not yet peculiarly sacred.

**Ben Sirach.**— Much clearer are the lines of cleavage in the passage already quoted from the grandson of Sirach, as well as in this, from the same context: "Whereas many things and great

*Even the buckler of Nestor, the fame whereof unto heaven Reacheth, as being of gold, wrought solid, itself and the arm-rods.

have been transmitted unto us through the Law and the Prophets and the others that followed after them, wherefore one must needs praise Israel for culture and wisdom,— and since there is need not only for such as (can) read (the original) to get understanding but also for those without to profit both by the word and the writ of the lovers of learning (the scribes), therefore my grandfather, etc." Here we discover not only the triple classification, Law, Prophets and the Others, but also what impulse was urging to recognition of literary values and consolidation of a body of authoritative scriptures: It was the contact with Greek culture, in which literature played such a dominant part, that forced Israel to recoil and say in self-defense, "But we too have a literature, greater even than the Greek," and to make it accessible, Israel proceeded to translate it into Greek, the vernacular of culture, as Ben Sirach relates. This contact with the Hellenic world started Israel on the path of self-vindication, which spread out into the great missionary propaganda of early Christianity.

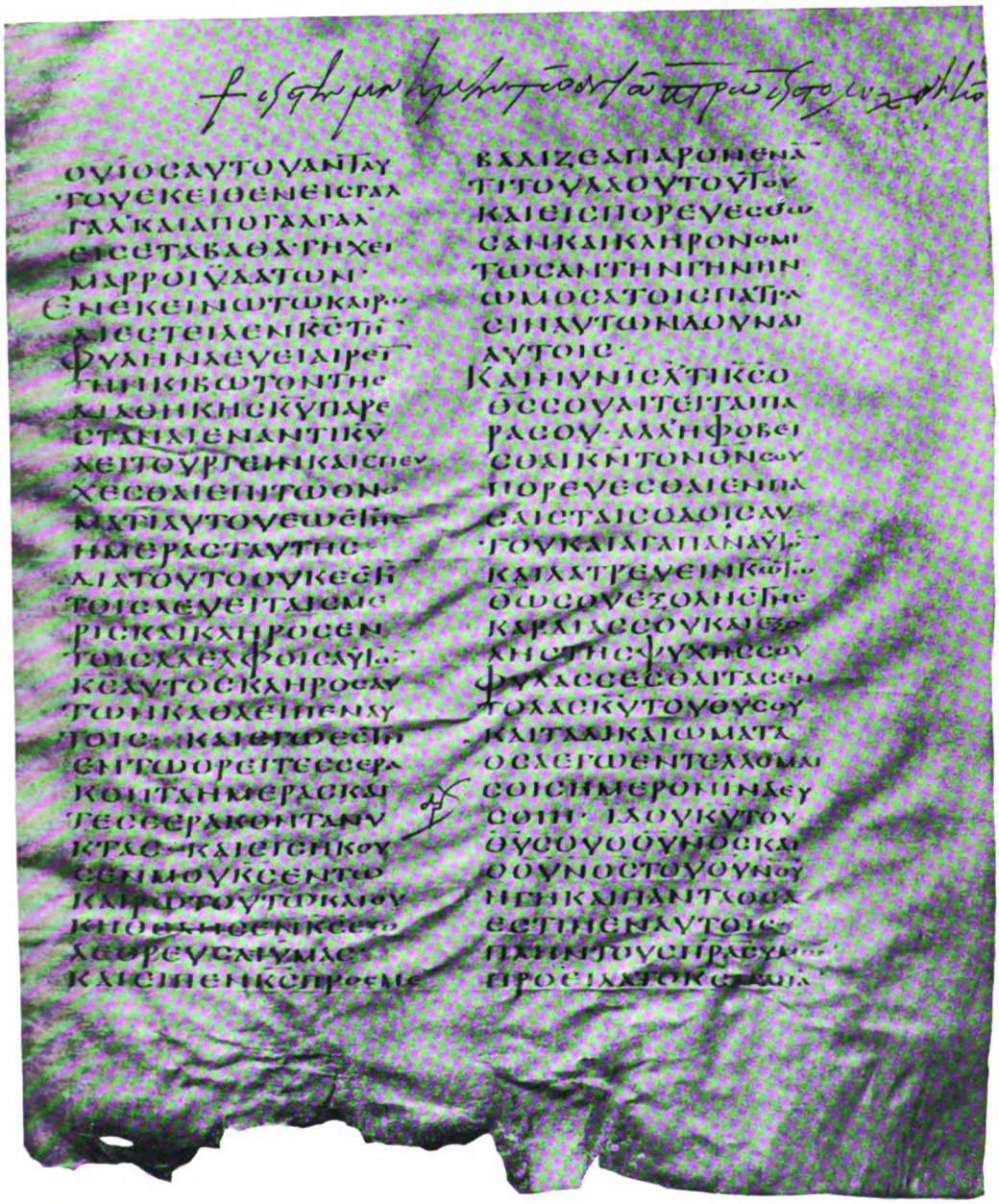
**Men of Grace.**— The authors that Ben Sirach names in his 'Hymn of the Fathers of Old' (xliv, 1; l, 24) are these: Moses, Joshua, Samuel, David, Solomon, Isaiah, Jeremiah, Ezekiel, Job, Twelve Prophets, Nehemiah, but there is no clear indication of what or how much he attributes to each. Ecclesiastes, Daniel and Esther are not mentioned. Ruth may be included in the works of David (the Psalms), and Ezra in Nehemiah. The substance of Ezra iii, 2 is quoted in xlix, 12; the *Law* and the *Prophecies* are mentioned in xxxix, 1. Some have thought to find reference to Psalms, Proverbs and Job in xliv, 4–5, but these verses (xliii, 3–9, 7?) all refer, as Levi has perceived, not to Israel, but to pagan worthies, the contrast with whose perishable fame begins in v. 10: "But these men, the pious, etc." Neither is there any hint in Ben Sirach of a closed canon, though there may be some faint allusion thereto at close of the book of Malachi (iv, 4–6: "Remember the Law of Moses . . . Behold I will send you Elijah the Prophet, etc.," words doubtless appended by a later hand. Again, Qohéleth (Ecclesiastes) closes with a warning against making many books and wearying the flesh (xii, 12f). These verses, also doubtless inserted later, were understood by Rabbis to forbid not only the addition of any other work to the "Twenty-four," but also the study "to weariness" of any such, and even in later times to read at all any "outside" books, was held to forfeit all "lot in the future life."

**First Canon.**— In Nehemiah viii–x is found an elaborate account of the formal introduction, proclamation and acceptance of the Law on the part of the Jews returned from Babylon. It was read and expounded from morn till noon for seven days: one may say then it was *canonized* from the 17th to the 24th of the seventh month of the year 444 B.C. (the year when Thucydides was ostracized and Pericles' sway established in Athens). About 200 years later the list of the prophets appears complete, and over 100 later, in the latter half of the 2d century B.C., the roll of the "Rest" was finished and closed forever, and therewith the canonization of Jewish Scriptures was ended. Such at least is the face-value of the facts in evidence; but it must not be disguised that the trend of deepening research is to lower all the dates in question, to what extent it is not yet possible to determine. Thus it is not even certain whether Artaxerxes I (Longimanus, 465–425) or II (Mnemon, 405–359), is meant in Ezra vii, viii, and Neh. ii, 1, v. 14, xiii, 6; the whole Ezra-Nehemiah matter is unsettled, and there is a wide range between the radicalism of Torrey and the conservatism of Meyer.

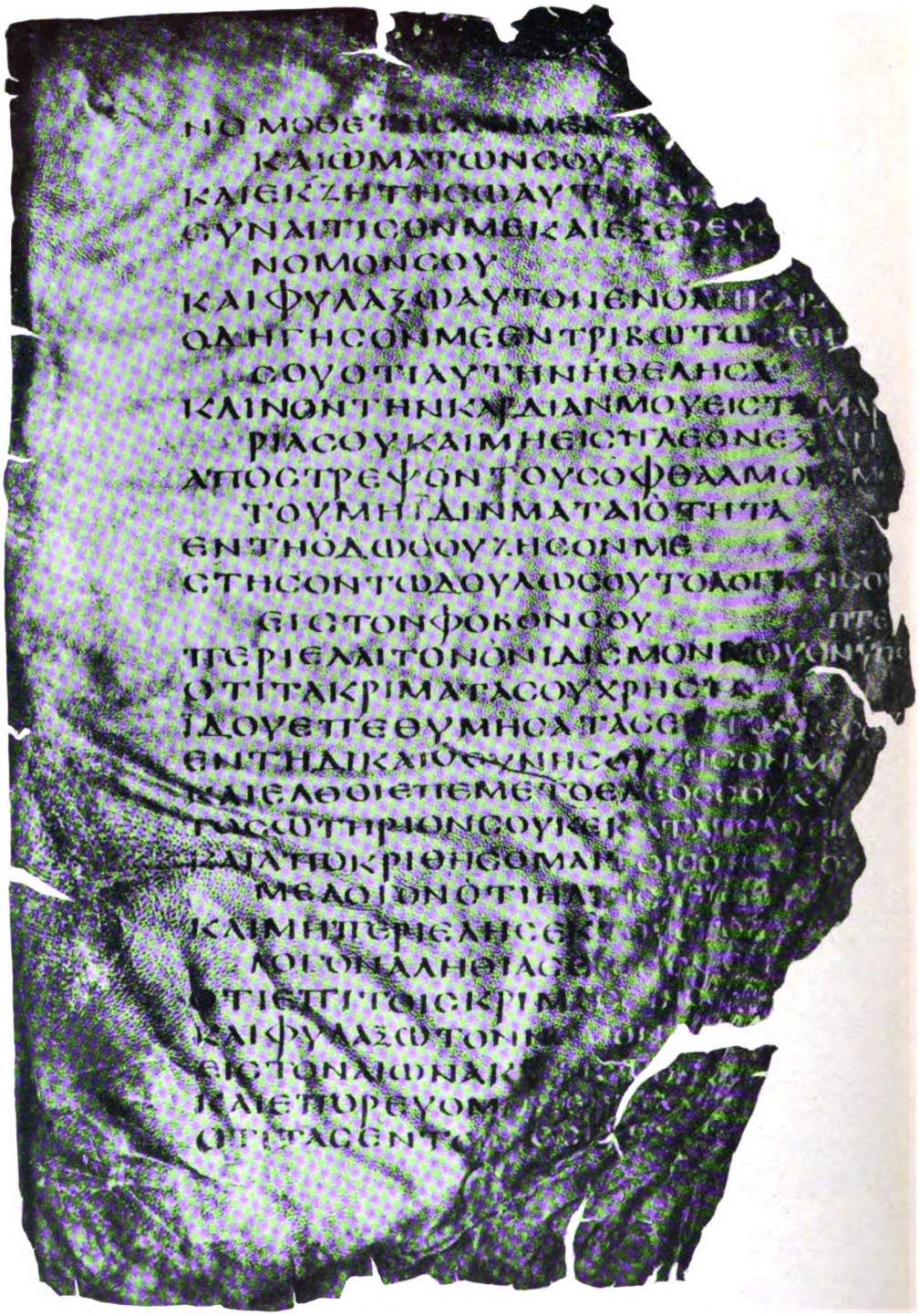
**Text Open.**— More important, however, than any single variation in date, is the fact that establishment of a *Canon* by no means implied cessation of literary process within the Scriptures canonized. The sacred lists of Prophets and Writings were never formally closed with any such ceremony as honored the Law, which to the last retained its position of easy pre-eminence, but even its majesty was attinged by various hands for hundreds of years after its canonization. Of this there are many clear indications; one may be noted. In Ex. xxv-xxxi is a body of regulations concerning details of worship and especially sacred utensils and furniture; in Ex. xxxv–xl the same is repeated, often nearly verbatim, but in greater detail, by another hand; in this latter the Septuagint (Seventy) translation differs extensively from the Masoretic in arrangement, in diction and in the smaller amount of material, an index pointing to the fact that so late as 250 B.C. the text had not attained a final form.

**Jeremiah.**— Still more heavily must the Prophets and the Writings, protected by far less sacro-sanctity, have felt the finger of redaction. This is most clearly seen in the book of Jeremiah,* where the later Masoretic or Palestinian (Hebrew) text exceeds in length (by about one-eighth of the whole) the older Ægyptian text represented in the Septuagint. By so much the prophecies of Jeremiah were enriched after 250 B.C. Yet they were rated especially high by the post-exilic Jews (as appears from Daniel ix); indeed, it was just because they were so dear to the people's heart that they were edited and re-edited and enlarged and enlarged again. The interpolator was removed as far as possible from irreverence. His interpolations were in truth the answer of his soul to the strong appeal of the prophet. This holds quite as well of the other Scriptures of both Testaments. Extensive and repeated revision and interpolation is the sure sign of esteem and affection. The notion of an author's rights, as we count them, was quite unknown. The worshiper whose heart was enkindled by the saintly chant did not hesitate to add his own voice to that of the invisible choir. With respect, then, to every important book of the Bible, there is a highly antecedent probability, indeed almost a certainty, that it

* At this point it may be instructive to note the results of the latest analysis of the Jeremian prophecies, as set forth in Mowinkel's 'Zur Composition des Buches Jeremia' (Kristiania 1914) whose fundamental principle is, "The prophetic books are compilations, as are the Gospels": "Jeremiah" proper, cc. i–xlv (cc. xlvi–li forming a later appendix), is compiled from four written sources, A, B, C, D. Of these, A was a collection of Jeremian oracles; B, a rather personal narrative, perhaps composed in Egypt; C, a group of rather long speeches; D, certain anonymous prophecies of salvation, never professing to be Jeremian; A has itself been redacted, and a redactor compounded the four A B C D into the present "Jeremiah" sometime before 165 B.C. Even this analysis can hardly claim to be ultimate. Perhaps a dozen, or even a score of authors have contributed features to the composite photograph, "Jeremiah."



**Deuteronomy X, 6–15**
**Early 5th Century MS.**
**By permission, from a papyrus Manuscript in the Freer Collection**



Psalm CXVIII, 33–45
5th Century MS.
Washington MS. in Freer Collection

has had a prolonged birth, that it is the joint issue of multiplied labors.

**Ezra.**— The modern idea, long prevalent, that the total canonization was effected by Ezra, who as president of the "Men of the Great Synagogue" (merely the shadow of a mighty name),* both unified all the Jewish Scriptures in one volume, restored the correct text and made the three-fold division into Law, Prophets and Writings,— this idea budded in the 13th century and developed amply 400 years later in the imagination of Elijah Levita (1538), and to still greater proportions in that of Buxtorf (1665),— a merely fictive outgrowth from the records that Ezra "the priest, the scribe" "ready in the law of Moses," officiated as chief reader during the work of canonization of the Law (Neh. viii, 1, 2, 6, 9, 13).

**Meaning.**— The occasion of this latter is very significant. Since the first return from Babylon (536 B.C.?)† three generations had passed away, but affairs in Jerusalem and Judea, so far from showing improvement, had grown even more deplorable. Not only were country and city the prey of neighboring freebooters, but far worse, a process of miscegenation with the heathen nomads and of consequent religious degeneration and decay had set in, and threatened to extinguish Israel in the South as totally as (already) in the North. Ezra had indeed not neglected the most drastic measures against this amalgamation (Ezra x), and in the midst of a drenching rain had pledged the people to put away all "strange wives," even those that were mothers. Nevertheless the strong hand of the governor Nehemiah was needed to lift up the people from their degradation, to restore the walls that were broken down and the gates that were burned with fire. It is the revival of a national consciousness, the reanimation of a perishing people, that is celebrated in that great Feast of the Tabernacles (*Chag Ha-sukkoth*). It is the group-soul that comes back to life and the canonization of the Law is the seal and symbol of the new career just opening. No such formal solemnity marked the canonization of the Prophets and the Rest, yet we may be sure that the significance was similar. They were conservative measures, protective reactions of the racial consciousness against an environment hostile or still more dangerous in its friendship. Some such instinct of self-defense seems to have dictated the formation of every canon.

What then were the books thus sanctified and hallowed as the guardians of the national life? As already indicated, they were the "Four-and-Twenty"; Genesis, Exodus, Leviticus, Numbers, Deuteronomy (forming *Torah*, the Law); Joshua, Judges, Samuel, Kings, Jeremiah, Ezekiel, Isaiah, the Twelve Minor Prophets (forming the *Nebi'im*, Prophets); Ruth, Psalms, Job and Proverbs, Ecclesiastes, Song of Songs and Lamentations, Daniel and the Roll of Esther, Ezra (including Nehemiah) and Chronicles (forming the *Kethubim*, "Writings" or Hagiographa).* These familiar names agree in the main with the Greek, whence the Latin, and denote the books according to Content or Author; but the Hebrew uses instead the first words of the Content; thus, "Breshith" (In-the-Beginning), "(Velleh) Shemoth" (Now-these-the-names, Ex. i, 1), "Vayyiqra" (And-called, Lev. i, 1), "B'midbar" (In wilderness, Nu. i, 1), "Elleh Ha-d'barim" (These-the-words, Deut. i, 1); (but "T'hillim," Psalms), "Mishle" (Proverbs-of), "Qohéleth" (Words of Qohéleth, Ecc. i, 1), "Shir Ha-shirim" (Song of-the-Songs, i. 1), "Ekah" (How, Lam. i, 1) (but "Dibre Ha-yamim," Words-of the-days Chronicles). Still other titles, as Book of Creation; of Patriarchs; of Penalties; of Priests; of Offerings; of Precepts, of Numbers; of Reiteration, of Reproofs; Prayers; Book of Wisdom; Lamentations — which seem to show later influence — are found in the Mishnah.

**Number.**— Note that our present two Books of Samuel, two of Kings, two of Chronicles are each reckoned as one book; also the Twelve Minor Prophets as one, and Nehemiah is included in Ezra, which reduces our present 39 by 3 + 11 + 1, i.e., by 15, to 24. It is perhaps not quite accidental that this number is the double of the sacred Number Twelve, the number of the Tribes of Israel. By its peculiar spiritual properties, as the most divisible of all small numbers, Twelve justly reigns among symbolic and significant numbers, though Ten, as the number of fingers on the hand, has very unfortunately displaced it as the basis of notation.

**Apocrypha.**— In IV Ezra xiv, 37–48 (written shortly before Domitian's death, 96 A.D.) we find a purely imaginative account, with mythologic elements, of the writing or copying of 94 books, by Ezra with five assistants in 40 days, at command of God. Of these, "the "Four-and-Twenty, which thou didst first write, thou shalt publish, for the worthy and the unworthy to read; but the last 70 thou shalt hold back and give only unto the wise of thy people. For in them is the vein of insight and the well of wisdom and the river of knowledge." The 70 books, regarded here and also in wide circles of the Jews as superior even to the 24, are the *Apocrypha*, of which this IV Ezra is itself a great part. The number 70 is also sacred and symbolic as in the 70 (strictly 72) translators (the Septuagint), the 70 disciples (the universal mission, Luke x, 1–18), and elsewhere.

**Twenty-two.**— The number 72, as six times 12, was also emblematic, and 22 was the number of letters in the Hebrew alphabet; hence Ephiphanius divides the foregoing 94 into 22+72, and Josephus actually gives 22 as the number of the Books (con. Ap. i, 39, Niese), and Origen also, as quoted in Eusebius 'Historia Ecclesiæ' vi,

* As shown by A. Kuenen in 'Over de mannen des Groote Synagoge' (1876; tr. into German by K. Budde, 1894).

† The actuality of which is now doubted or denied in the highest quarters, since Koster's 'Herstel van Israel in het Perzische Tijdvak' (1893), in spite of Wellhausen's concessive rebuttal (1895).

* So given as what "our Rabbis teach" in the classic Talmudic passage, the Baraitha ("outside" gloss) with Gemara (comment), in Baba Bathra ("gate," or division, "last"), of the first section of the Fourth Order of the Mishnah, dealing with Neziqin ("damages"). The whole passage (14b, 15a) is full of queer traditions concerning biblical authorship, as that "the Men of the Great Synagogue wrote Ezekiel, and the Twelve, Daniel, and the Roll of Esther," that "Hezekiah and his company wrote Isaiah, Proverbs, Song of Songs, and Qohéleth," and was formerly, though without reason, supposed to contain real data concerning the Canon.

25, who omits the Twelve (Minor) Prophets, and reckons Judges and Ruth together, as well as Jeremiah, Lamentations, and his Epistle in one; these three reductions leave only 21, but Origen adds, "And besides these are the Maccabees, which are entitled Sarbeth Sabaniel." Whence it might seem he regarded this work as canonic, though it is not now so reckoned by Jews or Protestants. From a Mishnah (B. B. 13b, 14b), it appears that each of the books (after the Law) had to be written on a distinct *roll*, except that Judges might be written with Ruth, and Jeremiah with Lamentations, each pair on one roll; which would then reduce the number of rolls, and hence in the reckoning of some, the number of Books, to 22. But the examples of Josephus and of Origen (who, taught by Jews, had uncommon knowledge of things Hebrew) show that the number and names of the Books "that defile the hands" was not absolutely settled till late in the 3d century of our era.

**Order.**—The order of the Prophets, "Jeremiah, Ezekiel, Isaiah," is at first surprising. Fanciful explanations have been devised but soberer criticism regards it as merely that of size, like the orders "Psalms, Job, Proverbs," and "Ecclesiastes, Song of Solomon," the largest leading. This explanation seems sufficient, but is not therefore necessarily correct; deeper analysis may yet show that the order of time has been roughly observed. Ben Sirach gives the familiar scheme, Isaiah, Jeremiah, Ezekiel, but then inserts Job before the Twelve Prophets (xlviii, 22; xlix, 7–10). The order of the historical works, Joshua, Judges, Samuel, Kings, is chronological and fixed, but in the Writings (Hagiographa) the greatest uncertainty prevails: Ginsburg tabulates at least eight different sequences, forming three grand classes: the Liturgic (of the Five Rolls), the Masoretic according to size, and the Talmudic according to time. This diversity testifies clearly to the comparatively late formation of the third part of the canon. It is interesting to note how Nehemiah, a man of affairs, glorified by Ben Sirach (xlix, 13) and evidently much more important than Ezra, priest and scribe, gradually retires before the latter, who rises steadily to the highest pinnacle in Jewish tradition, following the waxing ascendancy of the priestly idea in the course of Israel's history (though the Rabbis think it a rebuke to Nehemiah's vainglory; cp. Levy's 'Wörterbuch,' II, p. 184b).

**Josephus.**—A closer determination of the canonization of 'Prophets' and 'Scriptures' has been repeatedly attempted but with no great success. Josephus (100 A.D.) departs from the ordinary, both in the number 22 and in the division of the Books into three classes: Mosaic (5), historical (13), poetic and didactic (4), apparently counting Ruth with Judges and Lamentations with Jeremiah. His witness is so important as to deserve quotation; after mentioning the measures taken to preserve the purity of the Jewish blood, and that writing is confined to the prophets inspired of God, and eye-witnesses, he continues (con. Ap. i, 38–41): "For there are not with us myriads of Books discordant and embattled, but only two besides the 20 containing the record of all past time, which are justly believed (divine*). And of these, five are of Moses, which contain both the Laws and the tradition of the origin of mankind, till his death, and this period lacks little of 3,000 years. But from Moses' death till the reign of Artaxerxes the King of the Persians after Xerxes, the prophets write down the doings in their days in 13 books; and the other four contain hymns unto God, and for men, precepts of life. And from Artaxerxes to our time details have been written, but have not been esteemed as of like credence with those before them, because of there not having been the exact succession of the prophets. And it is evident indeed how we have believed in these Scriptures of ours, for during so many ages as have already passed, none has dared to add† or subtract or to change anything in them; yea, it is inborn in all of the Jews immediately from their very birth to esteem them as doctrines of God, and to abide in them, and for them, if need be, gladly die."

**Others.**—In a passage of disputed genuineness ('De Vita Contemplativa,' 3), Philo names four divisions, "laws, and oracles proclaimed through prophets, and hymns, and the rest whereby knowledge and piety wax together and are perfected"—"the rest" referring apparently to Proverbs and the Wisdom-literature. The New Testament (Luke xxiv, 44) agrees with Philo in the three divisions, Law, Prophets and Psalms, but elsewhere the constantly recurring division is twofold, into the Law (or Moses) and the Prophets. The Psalms are cited thrice (Luke xx, 2; Acts i, 23, xiii, 33), and David nine times (Matt. xxii, 42; Mark xii, 35ff; Luke xx, 41ff; Acts i, 16, ii, 25, iv, 25; Rom. iv, 6, xi, 9; Heb. iv, 7), but the New Testament consciousness of the other Hagiographa seems exceeding faint. Even Melito, bishop of Sardis, writing to the unknown Onesimus, speaks of the Law and the Prophets only, in giving the first detailed list of "the ancient books," of only 21 however, for he omits Esther, separates Judges and Ruth, but unites Samuel and Kings into one. Jerome (340–420 A.D.) in his preface to Daniel declares that "all scripture is divided by them (the Hebrews) into three parts: Law, Prophets, Hagiographa, i.e., into five and eight and eleven books"; but in the preface to Samuel and Kings, the famous "helmeted beginning to all the books which we turn from Hebrew into Latin," he is convinced there should be and are properly only "22 books of the ancient Law: of Moses five, of Prophets eight, of Hagiographa nine." For there are only 22 letters of the Hebrew alphabet,‡ of which "five are double, Caph, Mem, Nun, Phe, Sade, written one way as the beginning or middle and another as the end of words. Whence also, by the most, five books are accounted double: Samuel,

* This word (*theia*), generally given in the texts, is an interpolation, as Niese has shown, and very instructive. From their being "believed" the interpolator argued that they must be divine; later, from their being divine it was argued that they must be believed.

† Evidently Josephus was not *au courant* with modern criticism.

‡ The mystery of the origin of this alphabet of 22 letters (in a certain order), the mother of all Western and certain Eastern alphabets, and hence in a measure of the cognate civilizations, has long fascinated and defied inquiry. How came man to imprison spirit in speech? Ideograms and phonograms conducted to syllable-script, even to the old Persian, but no further. Whence, then, the supreme

Kings, Chronicles, Ezra, Jeremias with Cinoth, i.e., his Lamentations. Therefore, just as the elements are 22 by which we write in Hebrew all that we speak, and in these primes the human voice is embraced; so 22 volumes are reckoned by which, as if by letters and preambles, the infancy of the righteous man, while yet tender and fed on milk, is instructed in the doctrine of God." This passage deserves quotation as perhaps pointing to a diversity of judgment among the Rabbis at whose feet Jerome had sat, and as throwing a vivid light on the Fathers' habits of thought and of adjusting facts to a keen sense of the eternal fitness of things, in presage of the great conception that truth is harmony.

**Prophets.**— We may then sum up by saying that the Law or Pentateuch was first in Israel, by unanimous consent, by universal preference, and by hundreds of years. At a long remove came the Prophets in two ranks, the *former* (historic) being Joshua, Judges, Samuel, Kings, and the *latter* Jeremiah, Ezekiel, Isaiah and the Twelve, but all attained (in some form, not by any means exactly their present form) an undisputed place as authoritative perhaps as early as 200 B. C., possibly even earlier, though there is some divergence of opinion, K. Marti holding that the prophetic canon was still open to the days of Hillel the Old (75 B.C.–10 A.D.). That Daniel failed to find place among the prophets has been thought to show that the list was closed before 165 B.C., the supposed date of his visions; but this date is uncertain; there are perhaps much later elements in Daniel, which descend far down into the Roman period, according to the trenchant analysis of Eduard Hertlein. In fact, there is no exact date for the canonization of the prophets, such as is apparently found in the case of the Law; the feeling that the *list* was closed arose gradually and most probably not for a whole generation or more did it become general and accepted; and it was doubtless felt long after to be perfectly legitimate to add to a prophet's Book in a prophet's spirit and to modify it otherwise more or less profoundly. Hence the Prophets are found to have been interpolated more or less extensively long after the last of the name was enrolled in the canon. But insensibly the sacred awe spread itself deeper over the whole prophetic text, and all such tamperings, gradually grown slighter and rarer, now ceased altogether; and this reverence extended itself finally to the very letters and pointings of Holy Writ.

**Hagiographa.**— With respect to the third division, the "Writings," all the features of the foregoing hesitancy appear strongly marked. The question of 22 or 24 may have been largely a matter of convenience in rolls (*Megilloth*), as already stated, but not the admission or rejection of Esther, the Song and Qohéleth. Against these as not "polluting the hands" many eloquent voices were raised. Nay more, among the Later Prophets even Ezekiel had not quite escaped opposition; as contradicting the Law, some would have put his Book away, but Hananiah ben Hezekiah ben Garon was its successful champion, "spending* three hundred jars of oil." So, too, some opposed 'Proverbs' as self-contradictory, but in vain. However, regarding Esther the dissent continued for centuries. The Tannaim (10–210 A.D) would defend it by quoting Ex. xvii, 14: "Write this as memorial in a book," not convincingly to a western mind. Aqiba urged that "Haman said in his heart" (Es. vi, 6) refers to dictation by the Holy Spirit, which seems inconclusive, in view of Haman's character. Rabbi Samuel (200 A.D.), one of the last of the Tannaim, rejected all such proofs and declared that "Esther does not make hands unclean." Similarly the defiling virtue of the Song of Songs was questioned and again it was Aqiba that rose up in defense, declaring "all Writings holy but the Song the holiest"; "the whole world is not worth the day when the Song was given to Israel"; "he who sings from the Song in the wine-houses and makes it profane will not have share in the world to come." His great authority seems to have rescued the Song from the Chizunim (Apocrypha) to which some would have consigned it.

**Preacher.**— Most earnest of all was the strife about Qohéleth (Ecclesiastes), which Shammai's school defended against Hillel's. Said R. Judah, "the Song defiles, Qohéleth is debated"; and Aqiba, "if there was any debate, it was about Qohéleth only"; and Rabbi Simon ben Menasya, "the Song defiles, being inspired by the Holy Spirit, but not Qohéleth, being produced only by the wisdom of Solomon." Grätz holds that the decision as to the canon dates from 90 A.D., but as late as 150 A.D. Simon declared Qohéleth doubtful.

**Many Scribes.**— However, all such objections were finally overruled, though the so-called additions of Daniel and Esther, as well as the Baruch Epistle added to Jeremiah, were thrust aside. The critical movement made itself felt mainly in the exclusion of the numerous Chinuzim that had begun to spring up thick and to throng the entrance to the Canon. Qohéleth himself complains (xii, 12), "of making many books there is no end." Formerly, every writing was considered prophetic,† the phrase Esther wrote" (Es. ix, 29) was held to prove that she was a prophetess; if this seems strange, let us remember that, in comment on Ps. xlii, 5, the Rabbis reckoned the number of prophets at six (or twelve) hundred thousand, only prophecies significant for the future being published. Such views are, of course, centuries later, but they magnify and distort the real facts, that the literary production of Israel proceeded almost wholly‡ from the prophets and was hence religious in aim though often historic in content, and that there arose thence a strong presumption that every writing, as the work of a prophet, was holy. Nor must we fancy that the list of sa-

invention of letters? Halévy would derive it from Egyptian hieroglyphs, De Rougé from hieratic script, Delitzsch and Hommel from Old Babylonian — in vain. Then Hommel and Winckler (as Seyfarth already in 1840) turned to the sky,— for in the Qabbala the notion of the heavenly origin has been preserved, and in Job (xxxviii, 33,) we read of the laws of the heavens and their lordship over earth — first to the 12 signs of the zodiac, then to the 22 Old Hebraic lunar mansions still present in Job xxxviii-xli; and in these latter it is Eduard Stucken that claims to have discovered beyond doubt the originals of the 22 Canaanite letters, agreeing both in names and in order,—all of which and much more is set forth comprehensively in his 'Der Ursprung des Alphabets und die Mondstationen' (1913).

*That is, in its study and defense.

†Cp. 2 Tim. iii, 16 "Every Scripture God-inspired, etc."

‡Hitzig exaggerates in holding "all prechristian Hebrew books are canonic" (Hist. Crit. Comm. (Ps.), ii, p. 118).

cred writers was no longer than the list of sacred writings, since, as we have seen and shall see again, all such are highly composite, the results of revision and rerevision, so that each may very well embody on the average the labors of a dozen or even a score of scribes. The whole body of Hebrew literature may be the issue of hundreds or even thousands of pens. In this connection it is good to bear in mind that the scribe of that elder day was a person of rare dignity and accomplishment; even in the very advanced civilization of Egypt he figures very importantly in mural decorations, and it is not strange that he should have been esteemed still more, particularly among the Hebrews, where his culture was less generally known and hence more mysterious.

We may also recall that undoubtedly the main, if not the exclusive, interest of other scribes was religious. Even under the far more secular civilization of Assyria, the great library of Assur-banipal was composed in much the larger measure of tablets that dealt with religion in some or other of its phases. "The content is extremely varied: astrologic compends, the most important being 'As the God Bel,' fragments of the annals of the ancient kings, each event connected with the proper constellation; fragments of the Gilgamesh epos (Flood, Creation, Conquest of Tiâmat by Marduk, Ascension of Etana, Hymns, Prayers, Psalms, Rituals for Exorcism, the State Prayer-book, historical texts, Letters, Contracts, Commentaries on older difficult texts, catalogs of words, and Ideograms with interpolation)." Of these only the last five are secular, and the great predominance of the religious is apparent. Neither should we forget that in the Middle Ages, not very long over-past, the ability to write was confined almost wholly to the clergy. It is then by no means strange that in the very primitive Hebrew state, the functions of scribe and of prophet should almost coincide, that the writings should deal almost wholly with some aspect of religion and should all be regarded as authoritative and sacred.

**Hellenism.**— But when the conquests of Alexander began to spread Greek civilization over the Orient, including Juda, and still more, when the Jews of the Dispersion began to lead a larger life, to take an a half-pagan culture with some knowledge of the Greek language and even of Greek literature, we may believe that the power of the pen became far more widely diffused and its products not only greatly multiplied but frequently secularized. It was no longer possible to identify even partially the prophet with the scribe, there arose a profane literature by the side of the religious, and it was found necessary to discriminate between them. Then dawned the day of strife over the Canon, over the question, "Does this book make the hands unclean?"

**Wisdom and Song.**— After the close of the prophetic list, indicated later by saying, "When Haggai, Zachariah and Malachi died, the Holy Spirit left Israel" and even earlier, a new form of literature, the literature of Wisdom (*Chokmah*), began to flourish; two illustrious specimens are universally known and received as canonic, Job and Proverbs; a third, Qohéleth ('Preacher' or 'Ecclesiastes'), came later and met with less favor, but still, being ascribed to Solomon, made good its place among the listed. Also the Psalter, the National Anthem, the lyric cry of suffering Israel,* established itself as the book of Songs for the service of the second Temple, and there was no occasion to question Lamentations. Very different indeed was the 'Song of Songs,' a cento of love-lays, and we may justly wonder why such an erotic ever came to rank with the Writings, among them but not of them. The answer appears to be that it was not unjustly popular, parts of it being sung from an early day at yearly folk-festivals (Taanith, 48), that it bore the illustrious name of Solomon and finally that Aqiba (at the Synod of Jamnia, 90 A.D.) had recommended it as an allegory of God's Love for his People Israel. Nevertheless, as already observed, it was long doubted or rejected by many. The historic or quasi-historic books of Ruth, Ezra, Nehemiah and Chronicles offered no ground of offense and seemed necessary to complete the Hebrew History, while Esther, as a glorification of the Jew in exile, made strong appeal to the national consciousness and thereby established its claims, against long and strong opposition. Lastly, Daniel, as both intensely national and intensely religious, was admitted to the company of Writings, though not of Prophets, where would have been its natural place but for its later origin (not before 165 B.C.), and was peculiar in introducing a new form of literature, the Apocalyptic (revelative or visionary), which afterward attained to great dimensions as well as popularity.

**Cloture.**— These works, then, at the time of the close contact of Jew and Greek, in the dawn of the critical consciousness of Israel, succeeded, not without dissent widespread and sometimes vehement, in securing a permanent foothold among expressions of race-consciousness before the doors were shut in the street and no further admissions allowed. It was indeed high time for the cloture; for "of making many books there was no end," and already a great throng were knocking and clamoring for admittance. Such were Baruch, Judith, Maccabees, Sirach, Tobit, as well as Jubilees, the Wisdom and the Psalms of Solomon, the Assumption of Moses, with the Apocalypses of Baruch, Enoch, Ezra, Noah and others. Had these been received, it would have been hard indeed to close the gates at all, and to have canonized all would have amounted at last to canonizing none; neither was there any clear principle of discrimination, and the common consciousness rejected them in a lump. Henceforth no more books sacred and authoritative could proceed from the Hebrew mind, all of whose literary energies were to be directed toward the exploitation, explication and elaboration of the exhaustless treasures already securely gathered in the *Law*, the *Prophets* and the *Writings*. Hence, under the un-

* At least half the Psalms are distinctly national, expressions of the communal experience; of the rest, in a large number the much-afflicted "I" is in all likelihood a personification of the cruelly buffeted People; in some, perhaps personal experience may lie at the base, but the individual features have been mostly effaced in the course of successive compilations of compilations.

wearied hands of so many generations of Rabbis arose that stupendous mass of interpretation and commentary known as the *Talmud* (Learning) in all its endless divisions, extensions and ramifications, which is thus seen to be a direct and inevitable result of the sealing of the Canon, of the authorization and sanctification of a definite body of national literature, so much and no more, even as this itself was the unavoidable reaction from the wide and intimate contact of Jew and Greek brought about by the conquests of Alexander and the domination of his successors.

**"Outsiders."**— Neither is it strange that in Alexandria, a firm seat of Hebrew learning and influence, more liberal views with respect to the "Chitzunim" prevailed than in Palestine and that the so-called Alexandrian Canon, had it not yielded to Palestinian authority, would have sensibly enlarged the volume of Writings. As it was, these "Outsiders" were sent forth upon very uncertain seas, to be buffeted hither and thither for nearly 2,000 years, and only within the last decade to come into their critical rights.

**Style.**— It is impossible to tell their story here even in bare outline; only some salient points may be noted. From the first they seem to have enjoyed a popularity not wholly unmerited. Though never rising quite to the highest summit of the canonized Scriptures, in many parts they attain very respectable elevation, distinctly above a very large portion of the canonics themselves. They are written in general with considerable literary skill and have often a good share of human interest. Their content is various, as is also their literary form. In Baruch the elder prophecy of Israel reappears like an Indian summer; in the Book of Wisdom we find the Faith of the Fathers tempered with Alexandrine philosophy; in Bar Sirach, proverbial philosophy tempered with religion; in the Odes of Solomon the hopes and enthusiasms of the early Gnostics glow with poetic ardor; in IV Maccabees the Jew has learned the ways of the Stoic and the tongue of philosophic Athens; in Enoch, IV Ezra* and others, the apocalyptic imagination burns at white heat; in I Maccabees, Judith and Tobit the narrative faculty of the Jew is displayed to high advantage; in I Esdras pure literature comes to its own in the story of the three Youths, while in Ahikar the walls of nationalism seem to fall away and disclose the wider horizon of universal interest,— all these and many more† in the 30 "Books Outside," the Chitzunim or Apocrypha. Some of them won the honor of occasional citation by the Rabbis, Ben Sirach oftener than all the others put together, and Baruch is said even to have been read in the synagogue on the Day of Atonement.

**In the New Testament.**— But their chief recognition came not from Jews but from Christians. Since the proto-Christian movement found its start not in Judea but in the Dispersion, it is not strange to find Apocrypha frequently quoted in the New Testament, as Matt. xxvii, 9 ('Jeremiah the Prophet,' the passage is not in the canonic Jeremiah), Luke xi, 49 ("Wisdom of God"), Jude 9 ("Assumption of Moses"), Jude 14ff ("Enoch"), 1 Cor. ii, 9 and Eph. v, 14 ("Apocalypse of Elijah"), Heb. xi, 37 ("Martyrdom of Isaiah"). How many are the points of lighter contact may be seen from Dittmar's 13 pages of references ('Vet. Test. in Nov.,' 149–162).

**Adoption.**— When the triumphant Christian Propaganda had organized itself into a church, and, indeed, during the process of organization, the question of standards, of authoritative scriptures, arose, and the first most obvious answer, since the propaganda issued from Jewry in contact with Hellenism, was that the standard books of the Jews should be also the standard books of the Christians; and, accordingly, we find them quoted from the start as authoritative. Since the Greeks had no such standard (even in Homer), there was, of course, none to be taken over into their new faith by the Gentile converts. Naturally, diversities of view with respect to the canon that were current in Jewry passed over into the ranks of the Christians, with the difference already noted, that the new religionist tended toward a more liberal view than that of the stricter orthodox Jews, represented so forcefully by Rabbi Aqiba. Accordingly, not only were the Apocrypha from the first used freely by the Christians, but many were finally received into the Catholic canon.

**Early Use.**— The history of these Deuterocanonics (sometimes so called to indicate their secondary position) is both interesting and instructive. The free use of them in the New Testament has already been noted. Except, perhaps, Baruch, 1 Maccabees, and the additions to Daniel, they seem all to enter into the religious consciousness of the Apostolic Fathers, though the allusions are, as a rule, loose and implicit, as is generally the case with the Fathers. Next we find nearly all attested by this or that apologist, as Baruch by Athenagoras and Irenæus, the latter also noting that the stories of Bel and the Dragon were ascribed to Daniel. Justin Martyr is the first to hint at the ability of the Church to form its own Canon, regardless of Jews, though the Church itself came only slowly to this conviction. Melito, bishop of Sardis, gave (170 A.D.) the first list of Jewish canonics, omitting Esther. Origen mentions Maccabees at the foot of his list (Eus. H. E. iii, 11), but writing to Julius Africanus he defends Judith and Tobias and the Danielic additions, agreeing with the Martyr that the Church is empowered to decide, and introducing all the Deuteros in his Hexapla. The Codex Claromontanus, itself of the 6th century, contains, immediately before the Epistle to Hebrews (with which it ends), a table, "Versus Scribturarum Sacrarum," referred by such opposing critics as Harnack and Zahn to Alexandria and the time of Origen, in which are found the two 'Wisdoms' (of

* The works named *Esra* (Greek, *Esdras*) are a tangle. The I Esdras of the LXX and the English Apocrypha (entitled 3 Esdras in the Vulgate) for the most part parallels and varies with a fixed tendency certain portions of the canonic Ezra — Nehemiah (the Hebrew Ezra, entitled 2 Esdras in the Greek), of which the two divisions, E. and N. in English, are the I and II Esdras of the Vulgate. IV Ezra (the II Esdras of the English Apocrypha), to which the first two chapters are a Christian prefix, is a beautiful Jewish apocalyptic philosophy, written about 90–96, vehement but tender, a match both for Romans and Revelation, a noble endeavor "to comprehend the ways of the Highest" (v. 34).

† As the "Testaments of the Twelve Patriarchs."

Solomon and Ben Sirach), 1, 2, 4 Maccabees, Judith and Tobias (along with the Epistle of Barnabas, the Shepherd of Hermas, the Acts of Paul and the Revelation of Peter). Bishop Hippolytus cites 'Wisdom' as Solomon's, uses Maccabees and Baruch as Scripture and treats of the incident of Susanna. In Africa, Cyprian, as well as Tertullian, is said to employ all the Deutero-canonics but Judith and Tobit. This is, indeed, by no means certain. On looking up the scores of "citations" the reader will find that nearly all are more or less faint resemblances and prove nothing whatever; however, in writing "Against Valentinians," Tertullian does declare (c. 2), "The Face of God is awaited of whoso seeketh Him in simplicity, as teacheth 'Wisdom' itself, not of Valentinus, but of Solomon," with manifest allusion to *Wisdom* i, 1. He also refers to the Maccabees as fighting on the Sabbath, but does not cite the books.

**Later.**— On entering the 4th century we find the authority of these Chitzunim on the wane. At Alexandria the far-famed watchdog of dogma, Athanasius, in his 39th Festal Epistle (367 A.D.) accepts only the Hebrew Old Testament, excluding Esther, but allowing it to be read to catechumens for edification and instruction, along with the two 'Wisdoms' and 'Judith' and 'Tobias' (also the *Shepherd* and the *Teaching*). Similarly Saint Cyril at Jerusalem,—as always a centre of Jewish influence, —nor will he allow any book not read in the Church to be read privately. Eusebius classes them all as *Antilegomena* (Contradicted), as intermediate between the Accepted and the Rejected. Still they maintained their popularity, as shown by their persistent presence in Greek manuscripts and in Oriental versions.

**Jerome.**— Passing over this we now come to Jerome who, in his "Helmeted Prologue" rejected all but the Hebrew Canon as apocryphal, naming the 'Wisdoms,' Tobias and Judith, which indeed the Church "may read for edification of the people, but not to confirm the authority of Church dogmas."* The Solitary of Bethlehem was the most learned Christian and especially the most erudite Hebraist of his day; he was also the companion of Rabbis, and his weighty words bore down the scale against the Deuteros, especially wherever his Vulgate translation of the Old Testament into Latin found its way.

**Rome.**— But Rome had not yet spoken nor did speak till in the so-called Decretal of Gelasius "Concerning books to be received and not to be received," dating in substance (it is held) from the synod convoked by Pope Damasus in 382. In this, as well as in the Canon of Innocent I, "sent in 405 to a Gallican bishop in answer to an enquiry," the list is the same as that adopted by the Tridentine Council in 1546, and all the Deuteros are included.

**Augustine.**— The leading spirit of the African Church, Augustine, would distinguish degrees of inspiration but used the Deuteros freely and the four synods that he guided (Hippo 393, Carthage 393, 397, 419) on traditional and liturgical grounds included all the Deuteros in their sacred lists. Of these the Carthaginian passed over to the East and there by its mere authority determined the attitude of the Greek Church, which, however, in excess of generosity, added III Maccabees, a Jewish-Greek patriotic extravaganza and maintained the canon down to the beginning of the 18th century (*Rev. Bibl.*, April 1901).

**The End.**— Meanwhile for over 1,000 years in the Latin Church the beam was held trembling between acceptance by Rome and rejection by Jerome, reminding us of the famous line of Lucan:

"Victrix causa deis placuit, sed victa Catoni."

The scholars sided with the man, the untutored mind and all underlings of authority were led by the other; the chief of the schoolmen, St. Thomas Aquinas was hesitant and bewildered. But the final decision came at last. In 1442 the Council of Florence approved the "Decree for Jacobites" of Pope Eugenius IV, which declared the Deuteros received by the Church to be inspired, but did not yet say 'canonic'; not until 1546 did "the holy œcumenical and general Council of Trent" by its decree of April 8 establishing the Canon, "the entire books [of the two Testaments] as sacred and canonical with all their parts as wonted to be read in the Catholic Church, and as found in the ancient Latin Vulgate edition," stamp authority upon all the Deuteros, including Tobias, Judith, Wisdom, Ecclesiasticus, Baruch, I and II Maccabees, with "Let him be anathema" on "whoever does not receive." Herewith all doubts were excluded; and it is again notable that the grounds of canonization did not involve authorship or character of the books, but only tradition and liturgy; they had been accepted and used as canonic, and therefore were established as canonical, precisely as at Carthage nearly 1,200 years before. Thus had Trent filled up the gap left by Florence, but in so doing it had opened again the very gap that Florence had closed, for it did not affirm the inspiration explicitly. This defect, which had begun to give annoyance, the Vatican Council of 1870 duly amended by stamping all the canonicals as inspired in all their parts — thus closing the discussion forever.

**Basis.**— The Church has thus based both canonicity and inspiration on authority, and in truth with wisdom, for they could be based on nothing else. The difficulty is not theological but psychological, as Hobbes long ago perceived. Though a man might honestly say "the spirit of Jehovah is upon me," he could never communicate his own consciousness to another, he could never make another know his own self-knowledge.

**Rejection.**— Authority, however, may be either acknowledged or rejected, and in the stress of controversy with Eck in Leipzig (June 1519), Martin Luther found it necessary* to reject II Maccabees as outside the Canon, in order to invalidate the argument for Purgatory

* The phrase is notable. The reader will remark that nowhere is it a matter of reason or argument, neither could it be, but solely of authority. At first the question was not, "Are these books canonical?" but rather, "Shall we establish them as canonical, as a part of the rule of faith, of the standard of the truth?" In Jerome's view, what served to confirm the Church doctrine should be canonic, what did not was uncanonic. Such seems to have been the guiding principle with the most; though few were so bold in statement as the Hermit.

* But hardly sufficient, since the doctrine of the purgatorial fire was certainly a part, however inessential, of the Jewish faith, as indeed also of the Zendavestan.

drawn from the example of Judas (xii, 43–46). Moreover, in the first edition of his translation of the Bible, he gathered together the Deuteros with the other Apocrypha between the Testaments, as the unholy between two holies, a position of dishonor to which Protestants universally consigned them, but which they have not always been able to maintain. Calvinism has shown them all its native sternness, especially since the Westminster Confession (1647), which shore them of all authority and reduced them precisely to the low level of "other human writings." The Anglican Confession of 1562 had been milder, restating the patronizing position of "Hierome." However, they were still printed in Protestant Bibles till in 1825, after 12 years of preliminary wrangling, the Edinburgh branch of the British and Foreign Bible Society announced to London that the Scottish societies would withdraw their support unless the British and Foreign Bible Society should finally and entirely desist from distributing Apocrypha. After two more years of warm debate, London yielded, whereupon most of the continental branches withdrew, and the Scottish branch, on the refusal of the Society to retire all its officers that had championed the Apocrypha, itself withdrew and founded a new Bible Society in Edinburgh.

**Cut off.**— Since then the Deutero-canonical Appendix (along with all Apocrypha) has been omitted from nearly all Protestant Bibles in English-speaking countries, though still retaining its ambiguous position among other Protestants, and still furnishing lessons, though in diminishing numbers, for the Anglican liturgy, and even appearing in a separate volume of the Revised Version (1894), in a translation inferior to that of the canonicals.

**True Worth.**— Meantime, however, with the general deepening and broadening of research, due to the critical spirit of modern scholarship, interest in all the "outsiders" has been revived and greatly intensified and has assumed a thoroughly rational character. It is now seen that these works are natural and intelligible expressions of the Hellenistic soul, of the Jewish mind active under the profoundly altered conditions of its intimate contact with the spirit of Greece. It is also perceived that they sustain the most vital relation to the greatest event of all history, the proclamation of the Gospel, the propaganda of primitive Christianity, to which they form a prelude and accompaniment, and to the correct understanding of which they are well-nigh indispensable.

**Kautzsch.**— Accordingly, as attention has been centred more and more on the origins of Christianity, the Apocrypha have been studied more and more intently. An unequivocal sign of this lively interest may be seen in the splendid editions that have recently appeared, not only of separate books, but also of the whole body of such literature discovered thus far. The great work of Kautzsch, collaborating with 16 German scholars, on 'Die Apokryphen und Pseudepigraphen* des Alten Testaments' appeared in 1900 in two volumes of 542 and 540 large pages, treating 24 of these books, and the reader must remember that the whole Hebrew Canon has also been similarly treated by Kautzsch (assisted by ten German scholars) in two volumes of 960 and 637 slightly larger pages, on 'Die Heilige Schrift des Alten Testaments' (1909–10); whence it appears that though they are no longer entitled "Holy Writ," they at length receive critical attention of the first order — which is indeed far better.

**Charles.**— The scholarly work of Kautzsch has been quickly followed and surpassed by a still more ambitious work, bearing the like title, 'The Apocrypha and Pseudepigrapha of the Old Testament,' under the editorship of the illustrious scholar, "R. H. Charles, . . . in conjunction with many others" (Oxford 1913), professing to include "all the extant non-canonical Jewish books written between 200 B.C. and 100 A.D., with possibly one or two exceptions," though the reader will not find Josephus nor Philo; what is meant, is the non-canonical literature of unknown authorship, but even then the profession remains too wide for the "books" and too narrow for the dates. Plainly, then, these 30 "outsiders" have at length been established immovably in their rights, not indeed as inspired or in any way superhuman, but as shedding much welcome light on a very obscure but extremely important transition period in history.

**New Base.**— It remains to add that the position of Protestants with respect to the Canon, after they had abandoned the solid rock of authority and rejected the witness of tradition, seemed somewhat insecure and difficult to defend. It became necessary to find some still firmer foundation than either Jerusalem or Rome could offer, and this was sought, with the most extraordinary diligence and with the utmost prodigality of learning and ingenuity, in the Scriptures themselves which were to be their own witness, self-luminous, self-evident, self-proving. "Canonical authority of Scripture does not depend on the Church or on its councils," but "lies in the Scripture itself; it is inherent in the books so far as they contain a revelation or declaration of the divine will. Hence . . . the authority of Scripture is from God alone." These words of the eminent scholar and critic, Dr. Samuel Davidson, are found in the 'Encyclopædia Britannica' (9th edition 1875), but neither they nor any equivalent in the 11th edition (1910),— where the whole matter is left undefined and floating in the air, — such is the change a generation has wrought. The deliverance of Davidson is clear and direct, except for the elastic clause "so far . . . divine will," which saps it of force and value: for this clause simply means, "so far as they are inspired of God," but leaves the question "How far are they inspired?" entirely untouched. The proposition that the Scriptures are authoritative *so far* as they are divinely inspired, it is indeed impious to deny, but it is also vacuous to affirm.

### Canon of the New Testament.

In dealing with the Canon of the New Testament we find the area of inquiry much narrower and more sharply bounded and the sources of evidence more abundant as well as closer at hand; nevertheless, the debate has not been less but even more stubborn and acrimonious.

* This title is most unfortunate, since it suggests a fundamental *difference* that does not really exist. The device of the pen-name has been employed in every age, and is not absent from the Hebrew Canon; yet we do not dub Psalms and Proverbs and the Song and others Pseudepigrapha.

**Earliest Stage.**— Proto-Christian preaching, as it appears in the earliest Christian literature, was essentially missionary (a *Missionspredigt,* says Norden, 1913), the propaganda of a new universalistic, in contrast to the Jewish particularistic, Monotheism ("the monotheistic Jesus-cult," Deissmann, 1912), the "Eternal Gospel," "Fear God and give Him glory" (Rev. xiv, 7). Though directed to the whole Roman pagan world, "a light to lighten the Gentiles" (Luke ii, 32, Matt. iv, 16, Acts xiii, 47; xxvi, 23), its prime object the overthrow of idolatry, it proceeded from the Jewish Dispersion, its inspiration was the thousand-year-long struggle that Israel had waged for the One God against the surrounding hosts of Polytheism, its apostles (missionaries) were in general liberal-minded Jews or Jewish proselytes full of zeal for their pearl of great price, their new-found faith in God, and their common armory and arsenal of arguments was the Law, the Prophets, the Writings, the three-fold Canon of Hebrew Scripture, as it was then taking final and permanent shape in the teaching of Rabbis and in the service of the Synagogue. An evangelist like Paul or Barnabas might indeed deliver a philosophic discourse against idolatry, after the type of that on Mars' Hill (Acts xvii, 22-30), without allusion to Scripture, but on grappling in closer combat he would nearly always have recourse for proofs to the literature of Monotheism, the well of religion undefiled, the authoritative Books of the People of the Living God. So Tatian tells us ('Address to the Greeks,' c. 29) that, having found one demon (heathen god) here and another there instigating to evil, he chanced to light on certain "barbaric writings" (of the Jews), too old to be matched with opinions of Greeks and too divine to be matched with their errors, which declared the government of the universe to be centred in One Being. It is obvious, indeed, that the new religion would naturally and almost unavoidably adopt these sacred volumes as their own standards in their high debate, and, accordingly, we find early Christian literature richly laden with quotations from Scriptures (graphai); though by no means always either accurate or relevant, such citations and reminiscences show how completely Christian consciousness was dominated by the Hebrew Bible.

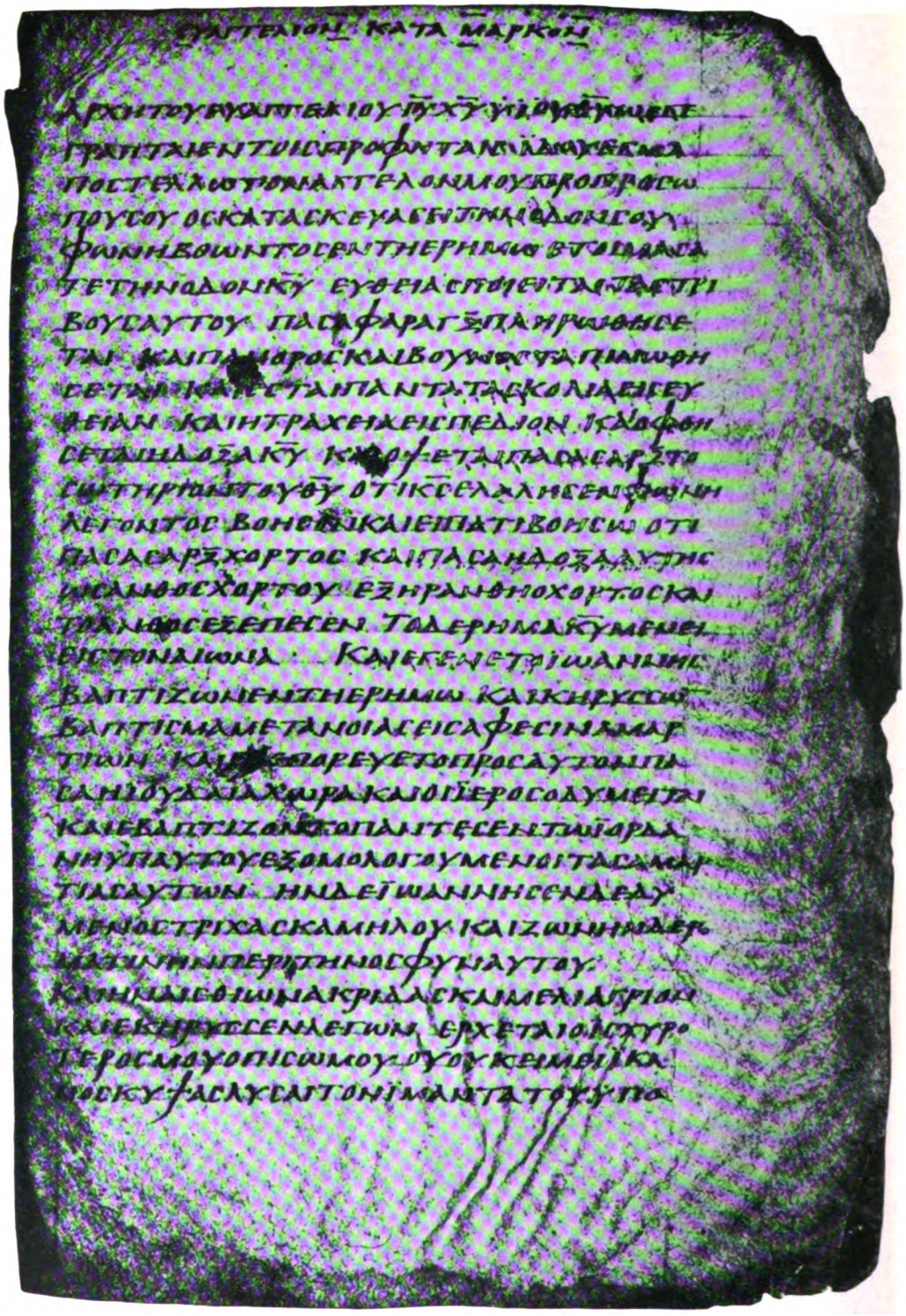
But comparatively few could extort its meaning from the Hebrew text, and, accordingly, recourse was had to the Septuagint or some other translation. Of the 350 citations in the New Testament from the Old, about 300 lean toward the Septuagint, away from the Hebrew. Hence it was natural, if not inevitable, for the proto-Christian to look more kindly upon "outsiders" than did the Palestinian Jew, since he found them not only enlisted but actually inscribed among the translated Scriptures "that defiled the hands." As already noted, we find works like Enoch and the Assumption of Moses, though lying far on the borders of the Apocrypha, still cited in Jude (xiv, 9), and several of these "extraneous works" established themselves fixedly in the Tridentine Canon,— about which sufficient has been said.

**Christian Scriptures.**— We may conclude, then, that the natural Canon of the early Christian was that of the Jews, not in its narrow Palestinian-Hebrew, but in a wider Alexandrian-Greek form, which not only made room already for numerous "outsiders," but also opened the door for admission of other works to be born hereafter of the world-wide religious fermentation and deemed worthy of place among the worthies of old. Yet it was centuries before any product of the new Faith could make good its claim to such recognition. Everywhere in our present New Testament the term Scripture(s) refers to the Hebrew Canon, as well as in the Apostolic Fathers, who attest and represent usage in the first half of the 2d century,— with one apparent exception: In 2 Peter iii, 16, we read: "even as our beloved brother Paul . . . wrote unto you; as also in all his epistles . . . as also the other scriptures . . ." Here it seems plain that Epistles of Paul are spoken of as "Scriptures," such being the force of "other" ("remaining," *loipas*). However, the exception is only apparent, for this 2 Peter is recognized with practical unanimity (in spite of Zahn) as a pseudepigraph dating from (say) 170, though there is no sure proof of its existence before the beginning of the 3d century (Harnack, 'Chronologie,' 469), and moreover as proceeding from some source in Alexandria, where, from the looseness of prevalent conceptions concerning the Canon, the term "Scriptures" would find easier and earlier extension to Pauline Epistles than it would elsewhere. The famous verse does not, then, represent apostolic or even sub-apostolic, but, at the earliest, patristic apologetic usage, after the middle of the 2d century. Nor is the weight of its witness increased by the fact that the author impersonates "Symeon Peter, servant and apostle of Jesus Christ," who had died a century before.

A nearly contemporaneous, perhaps slightly earlier, use of "Scripture" is found in the Homily, formerly called the second Epistle of Clement to Corinthians (ii, 4): "And another Scripture says that 'I came not to call just men, but sinners,' "— exactly as in Mark ii, 17, Matt. ix, 13. However, we cannot conclude with confidence that there is any reference to these Gospels; for the sentence quoted is epigrammatic in form and was probably a slogan of the Gentile mission (just men = Jews, sinners = Gentiles), and as such it may have appeared in various writings before our era. Nevertheless, it is in any case cited as Scripture.

**Irenæus.**— On entering now the last quarter of the 2d century, we are met near the gate by the monumental work of Irenæus. This chosen champion of Catholic faith seems to have been sent about the year of the persecution (177), as presbyter of Lyons, on a mission to Rome, whence returning he succeeded to the bishopric made vacant meanwhile by the martyrdom of Potheinos. It was the crisis of church-fortunes in the battle with the "heretics," especially the followers of Valentinus and Marcion, the former the first great biblical theologian, the latter the only man that had understood Paul, though he misunderstood him (Harnack), and by the testimony of vehement opponents, both of them men of exceeding ability, religious devotion and spiritual insight, who had carried their campaign into

John IV, 53–V, II
Sample of inserted quire. Early 4th Century
Washington MS. of the Gospels, Freer Collection



Mark I, 1–7
Sample of regular hand of MS., late 4th Century
By permission, from the Washington Codex of the Gospels, in the Freer Collection

Rome itself and there established themselves (138–146) in a determined effort to "reform" the Church. Their "heresies" must have interested Irenæus intensely and on returning to Lyons he began writing, apparently at the request of some "very dear friend," who may have been the highest official, a series of five Books "Against Heresies." This "Detection and Refutation of the Gnosis falsely so-called" is ordinarily dated between 181 and 189: because in Book III, c. 23, is quoted the Ephesian Theodotion's translation of Isaiah, which appeared (Eusebius says) in the second year of Commodus (181); and in Book III, c. 3, we read that "Eleutherius (d. 189) now holds the bishopric (of Rome) in the twelfth place from the Apostles." While these statements may fix the date for so much of this book, it is clear that they fix less for the earlier and later ones. For the composition evidently extended over a considerable period, the separate books being sent from time to time to the "friend very dear." Especially is the interval noticeable between the second and the third; indeed, the work seems logically well-nigh completed in Book II with the minute description and confutation of heretical schools, while the other three concern themselves, apparently by afterthought, with setting forth and vindicating the whole body of Church-doctrine. Accordingly, this elaborate apology has especial interest as accompanying, characterizing and exhibiting in its gradual growth the idea of a *New Testament Canon*. In the earlier books we find scarcely any allusion to the sources of the Scripture citations, while in the later the references by name to nearly all the New Testament books become too numerous to catalogue. Approaching the close of the century we behold in birth the consciousness of a New Testament Canon.

**His Usage.**— What, then, is the Bishop's use of the term Scripture? It is not easy to give a thoroughly satisfactory answer. About 100 times the word refers clearly to Hebrew Scriptures; about 17 times it might include the Christian as well; about 16 times it would seem to be aimed more directly at the latter. A difficulty in determining the reference lies in the fact that Irenæus conceives of ancient Scripture as already containing in minutest detail the Gospel story and the history of the primitive Church (as did Justin and other leading lights), so that when he speaks of "Scriptures dominican," which we should use exclusively of the New Testament, his reference may very well be to the Old. Again, he seems rarely if ever to employ the phrase "the Scripture says" of any but Jewish Scriptures. He also distinguishes often between the Old Canon and the New that is just in birth, by such locutions as "neither any Scripture has told nor the Apostle has said nor the Lord has taught" (II, 43), and "all Scriptures cry aloud and the Lord teaches" (II, 3, 7), and "all Scriptures cry aloud and Paul moreover (et Paulus autem) bears witness" (II, 47)— all these examples being in the second book, after which he seems to have acquired new knowledge or felt a change of heart. Yet how largely the new literature bulked in his mind appears in the fact that of 1,467 citations 532 are Old Testament and 935 New Testament. This latter term itself is frequent enough in the later books of Irenæus, being used over a score of times, but never in the modern sense of a body of writings, always in the proper use of *covenant, dispensation;* it is "the Old order changeth, yielding place to the New": the Old is the lawgiving that was aforetime, but the "New is conversation (manner of life) according to the Gospel"; "the New Testament (covenant) having been known and preached by the prophets." For him the Christian Scriptures are not yet the New Testament.

**Four Gospels.**— What, then, are they? He gives no catalogue but proves (III, 11) that there are and must be in the nature of the case neither more nor less than four Gospels, since there are "four climes of the world" and "four catholic winds" and four faces of the Cherubim (lion, calf, man, eagle, Rev. iv, 7), "images of the activity of the Son of God." He is perhaps not far wrong, in voicing a vague but dominant sense of the eternal fitness of things and of the omnipresence of the Divine. In accord with this reverence for the Quaternion "a fount with roots of eternal being," the Johannine, though originally intended as unique, the sole and sufficient Gospel (Wendland, 'Literaturformen,' p. 236,) was ranged in the ranks of the Four. These he ascribes to Matthew "who edited a writing of Gospel among Hebrews in their own tongue"; to "Mark the disciple and interpreter of Peter"; to "Luke the follower of Paul," "who set down in a book the Gospel preached by him"; and "John the disciple of the Lord, who also leaned on His breast, himself also edited the Gospel, while tarrying in Ephesus of Asia" (III, 1).

**The Rest.**— The other Scriptures, though not yet classified, are cited often by name, Acts, Romans, 1 and 2 Corinthians, Ephesians, Philippians, Galatians, Colossians, 1 and 2 Thessalonians, Peter, John, Apocalypse,— the others are not named. Verses 7, 8 of 2 John are cited as from 1 John iii, 17, 7, also v. 11 as from John. Two expressions are used that are also found in Jude ("an example of just judgment of God," 7, and "faith delivered unto us," 3), but neither as quoted, nor is there reason to suppose that either was taken from Jude. Likewise the aphorism in 2 Peter iii, 8 is twice used (v. 23, 2; 28, 3) in the form "the day of the Lord is as a thousand years," but with no indication of derivation from 2 Peter. Three phrases are somewhat like phrases in James, but only one need be mentioned, "the friend of God," a characterization of a devout man, frequent in the classics and appearing in 2 Chron. xx, 7 ("Abraham, thy friend"). Harvey thinks he finds references to 10 passages in Hebrews, all of which is mere imagination; there seems to be no use made of this Epistle, the correspondences are merely in stock phrases. The whole verse Titus iii, 3–10, about avoiding heretics is quoted with the formula, "As Paul also said" (iii, 2, 4; also in i, 9, 3, in what seems to be an interpolation). Other supposed references are illusory; of about eight phrases, only one, "novelties of words of false knowledge," is referred to Paul (ii, 18, 51, 1 Tim. vi, 20) in a sentence much discussed and perhaps inserted. About half a dozen phrasal resemblances to 2 Timothy may be hunted down in Irenæus, and of 4, 10f, it is expressly said (iii, 1), "Paul has manifested

in his Epistles." There is no allusion to Philemon.

**Apocrypha.**— It seems, then, that seven Epistles, the Pastorals, Philemon, Hebrews, James, Jude, find no express recognition by Irenæus, though passages in the Timothies are ascribed to Paul. But the Bishop knows and uses still other "Scriptures." He cites (III, xxii, 1, xxxi, 1) from Isaiah: "And the Holy Lord remembered his dead of Israel that had slept in the land of sepulture, and descended to preach them salvation that is from Him, to save them." Again (IV, xxxvi, 1) he cites it in almost the same words from Jeremiah, as does also Justin (Dial. 72) characteristically accusing the Jews of suppressing it, though it is unknown to the Hebrew, Septuagint, Vulgate, Targums, Hexapla, and all other versions,— clearly a Christian addition useful in argument and the basis of the famous passage "the gospel was preached even to the dead" (1 Peter iv, 6). Again, (IV, ix) we find the apocryphal Daniel xiv, 3f, 24, quoted and ascribed to the prophet. Once more (IV, xxvii, 2) we find Enoch described as "God's legate to the angels," in apparent reference to the long story in the apocryphal Enoch, xii–xvi. Still further, at IV, xxix, 3, "It says, Sacrifice..." The passage cited here (also by Clemens Al., pæd. III, xii) as Scripture is not in our present Scriptures. Lastly, we find (IV, xxxiv, 2) the first commandment of the *Shepherd of Hermas* cited with praise as "the Scripture," and the First Epistle of Clement described and approved as "Scripture itself" or "very Scripture" (ipsa Scriptura). At II, lvi, 1 "the Lord said": "If, etc.," which words are also cited in 2 Clement viii, 5 as "in the Gospel," and Grabe thinks the reference is to "the Gospel according to Egyptians," whereof fragments are still afloat. Finally, the letter of Polycarp is declared (III, 3, 4) "written most sufficient" to teach "both the character of his faith and the preaching of the truth," and at V, xxxv, 1 the long citation from "Jeremiah" is found only in apocryphal Baruch (iv, 36-v, 9).

**Canon.**— Ten such examples are enough to show that the scriptural horizon of the ancient Bishop was notably wider than the modern, as well as only vaguely defined at many points. Manifestly the Canon is coming to birth, but for him it is not yet born. It remains only to recall that the allusions (real or apparent) to the later New Testament writings are nearly all to be found in the later books (III–V) of Irenæus, written it appears after the demand of his friend had been fulfilled, as an overplus beyond what was expected ("præter quam opinabaris"). Also, in the barbarous though generally faithful Latin translation of the Greek, it is almost impossible that some emendations should not be found,— the marginal comments of readers or copyists, which have crept into the text, as at V, xiii, 3, where the words "in second to Corinthians" are not in the Greek. These definite references to the New Testament Scriptures represent in large measure a somewhat later consciousness, even as Harvey notes. The rapid growth of this recognition of an authoritative literature, and of its precise determination, is the all-important fact that shines through the pages of Irenæus.

In Tertullian the development of nearly 20 years reveals itself distinctly. His earliest polemics, 'Ad Nationes' and 'Apologeticus,' are assigned to the year 197, and his literary span reaches to 220. Far more brilliant and prolific than Irenæus, indeed a forensic genius, but far less catholic and representative,— he was never canonized, nay, he fell ultimately into Montanism, a heresy much less rational and more extravagant than any he had so vehemently opposed,— his witness withal to the growth of the Canon-consciousness and the Canon itself is an invaluable supplement to that of Irenæus.

**Tertullian's Terms.**— The fierce African pours forth such a deep and rapid torrent of speech that one is often bewildered in its uproar. Some things, however, are heard distinctly, and it soon becomes clear that he has gone much beyond the Gallican Bishop. Of terms to denote the Scriptures, Old and New, together and apart, as a whole or in division or even opposition, he has about 30. He uses the word "Scripture" for the Christian writings (De Res. Car. xxvii, 1 and often elsewhere less certainly), but his favorite word is *Instrumentum*, for which he tells us (in Marc. IV, 1) *Testamentum* is more in use; he distinguishes two such Instrumenta (Testamenta), Old and New; he speaks of the "old Scripture" and the "New Testament" (adv. Prax. 15), of the "old instrumentum" and "our rather new apparatus"* (Apol. 47); also of the "old instrumenta of legal Scriptures" and "all our apparatus" (Monog. 7). With him *instrumentum* signifies (means of) *documentary proof*, a sense adopted from the Roman forum or books of law and still approved at the bar; over against the "instrument of Jewish literature" (Cult. I, 3), he sets the "Christian letters" (Prescr. Her. 37) and the "instrument of preaching" (Mod. 1). He has then clearly in mind a body of Christian evidential literature, and it seems remarkable that he still hesitates and rarely applies to it the term "Scripture."

**His List.**— This New Apparatus, Instrument, or Testament consists in his mind of two grand divisions: the Evangelic (Marc. IV, 2) and the Apostolic (Resurr. 39), called also "evangelic letters," "evangelic" (Gospels), and "apostolic letters," or simply "apostles." Of these two, the *first* consists of the Four Gospels, which, possibly for controversial reasons, he gives in the order John, Matthew, Luke, Mark (Comp. Codex Bezae: Matthew, John, Luke, Mark), the first two being apostles, the others only apostolic. The *second* comprises the "Instrument of Acts" (Marc. V, 2)— used relatively little, called also "Acts of Apostles," "Scriptures of Apostolics," "commentary of Luke,"— and the "Apostolic Instrument" proper, or "his own Instrument," i.e., the "Apostle's," i.e., Paul's, called also simply "Paul"; as well as, thirdly, the "Instrument of John" (Resurr. 38), embracing the Apocalypse and the First Epistle of John. The main division, "Instrument of Paul," consists primarily of the Ten Epistles, first collected by Marcion (near 140) under the name of "Apostle or Apostolicon" and in this order: Galatians, 1 and 2 Corinthians, Romans, 1 and 2 Thessalonians, Laodiceans (Ephesians), Colossians, Philemon, Philippians; but the "auostolic battle-front" (acies).

*This word "paratura" is a pet of Tertullian's, who uses it in senses diverse and sometimes rather strained.

as Tertullian calls it (Mod. 17), was strengthened by the three Pastorals of Timothy and Titus.

**The Dubious.**— So much, then, seems to have been not only definitely included but also placed and named in the body of Christian writings recognized as authoritative by Tertullian and doubtless in the main by the African Church. But there was also a considerable group of writings not yet securely folded within the sacred pale. Of these the Epistle to Hebrews was chief. In his pamphlet on "Modesty," having gone through the whole "discipline of the Apostles properly" (so-called), at the beginning of c. 20 he "superduces" another "redundant testimony of a companion of Apostles": "For there exists also a title 'To Hebrews,' of Barnabas, a man well authenticated by God," . . . "and surely the Epistle of Barnabas is more received among churches than that apocryphal Shepherd of adulterers"; he then quotes vi, 1, 4–8, almost as we now read them. His other allusions to this Epistle, though numerous, are illusive. Again ('Prayer,' 20), with apparent reference to 1 Peter iii, 1–6, he mentions the "prescription of Peter" as checking with the same mouth, because with the same spirit, as Paul, the glory of garments, etc., yet without any assertion of recognized authority. But this chapter is apparently interpolated, being out of connection with the context and absent from some MSS., one of which places here the words, "End of Tertullian's book on Prayer." Other allusions are quite unconvincing; perhaps Tertullian knew 1 Peter, but only as an appendix to his "Scriptures." Similarly he concludes his defense of the book of Enoch as "Scripture" with "the fact that Enoch possesses testimony in Jude, an apostle" (Fem. Dress, 3), but he does not stress this fact, merely "adding" it as of seemingly little weight, nor does he certainly use the Epistle, not even v. 25. The second Epistle of John (or the Presbyter) Tertullian may have known but does in no way recognize. The second Epistle of Peter, the third of John, and that of James doubtless existed in Tertullian's time but lay beyond the utmost border of authority or canonicity, being apparently unknown both to him and to the African Church. We have also seen that he rejected the Shepherd, for dogmatic reasons, as overlenient in matters of sexual relation, but accepted Enoch. The dates of Tertullian's numerous writings are too uncertain to permit discussion of the development and determination in his own mind of the Canon-idea,— only one positive and absolute datum is to be found: he was writing (Marcion I, 15) in "the 15th year now of the Emperor Severus" (207–08). However, the growth from the time of Irenæus is obvious and doubtless went on continuously during the 25 years of Tertullian's literary career (197–222).

**First Catalogue.**—The third important witness to the Canon at the junction of the centuries is the so-called "Muratorian Fragment," discovered (1740) by the "father of Italian history," Ludovico Antonio Muratori (1672–1750), in an 8th century compound of theologic tracts and five early creeds. It contains 85 lines of barbarous Latin, possibly a translation from Greek, cataloguing the Christian Scriptures. The date of the original seems to lie somewhere between 195 and 205 (possibly 210). The first line is "at which (or some) he was nevertheless present and so put down" (quibus tamen interfuit et ita posuit). The reference is seemingly to Mark, the first part of the list being lost, which doubtless noted both Matthew and Mark, as the second line reads, "third book of Gospel according to Luke," and the origin of the various books is described: four Gospels, Acts (assigned to Luke), thirteen Epistles of Paul (to seven Churches,— for there were just seven in Revelation,— two repeated and four personal), two of John, one of Jude, two Apocalypses (John's and Peter's), and "Wisdom written by friends of Solomon in his honor" (like a jubilee-volume presented to a university professor.). "Epistles to Laodiceans and to Alexandrians, feigned in the name of Paul, for the heresy of Marcion" are rejected, "for gall fits not to be mixed with honey" ("fel cum melle," as we might say, sand with candy); the Epistles "To Hebrews," of Peter, and of James are not mentioned, and "the *Shepherd* . . . it is indeed meet to read but not publicly in the church to the people, neither amid the prophets, complete in number, nor amid the apostles, to the ages' end." The Psalm-book of Marcion, along with Basilides and other Gnostics, is wholly rejected. Here then again is a region demarked in the main like that of Irenæus, and of Tertullian, but with some very notable divergencies. The list does not lay claim to authority but doubtless represents the general Roman opinion and usage of its time. Into further details we have no space to enter; but a rapid glance will show how the border warfare was maintained for yet hundreds of years.

**Third Century.**— The learned and liberal Clemens Alexandrinus conceived of the New Testament Scriptures (all save James, 2 Peter, 3 John) more generously than either the Bishop or the African. He recognized Hebrews, 2 John, and Jude, and in line with them the Apocalypse of Peter, the Epistles of Barnabas and Clement of Rome, both cited as apostles, and the Shepherd, quoted as divine. Clearly a case of the personal equation.

ORIGEN is very cautious in his classification, which is far from original, into authentic, intermediate, and unauthentic; the Apocalypse has won its way into the first class, Hebrews not so certainly; James, Jude, 2 Peter, 2 and 3 John are still in the second class, with the *Shepherd* on the edge; Barnabas, the Preaching of Peter, the Acts of Paul, and the Gospel according to Hebrews and Egyptians have settled down into the third division. His standard professed but not maintained, is *apostolic origin* according to the tradition of the Church,— an honest but futile attempt to escape to Reason, since the final appeal is still to the authority of tradition.

**Fourth Century.**—Eusebius seems to have completed his Church History in the year 324, and the first nine books perhaps before 314, but we know not when he began. There seems indeed to have occurred a perceptible change between the 3d and the 25th chapters of Book III: the *Shepherd*, treated very tenderly in the third, is summarily rejected in the 25th; also

the Acts and Gospel and Preaching and Apocalypse of Peter "we know have not been universally accepted" (in 3), but in 25 his Apocalypse is "among the spurious," while still worse, his Gospel and Acts are "all of them to be cast aside as absurd and impious," "the fictions of heretics," unworthy of place "even among the spurious." This is progress, surely. In his later discussion the historian uses a puzzling cross-division: First, the four Gospels; then Acts; "after this must be reckoned the Epistles of Paul"; next 1 John and "likewise the Epistle of Peter must be maintained"; "after them is to be placed the Apocalypse, if it really seem proper"; these are among the Confessed (*Homologoumena*). Among the Contradicted (*Antilegomena*), but "nevertheless recognized by many" are "the so-called epistle of James, and that of Jude," also 2 Peter, and the so-called 1 and 3 John. Among the Spurious (*Nothoi*) are the Acts of Paul, the *Shepherd*, Apocalypse of Peter, Epistle of Barnabas, the so-called Teachings of the Apostles, and besides "the Apocalypse of John, if it seems proper," and "the Gospel according to the Hebrews," "and all these may be reckoned of the Contradicted." Lastly, "those cited by heretics under the name of Apostles," "Gospels," and "Acts" which are "fictions of heretics . . . absurd and impious."

It seems worth while to note the standard applied by Eusebius: it is "church tradition" alone that decides what are "true and genuine and commonly received." Some were universally received, some by most but not by all, some by only a minority, some "by no one of the succession of Church writers deemed worthy of mention." Clearly there was still much ground for debate.

As general result, we find the notion of a body of authoritative Christian documents rapidly forming in the usage of Irenæus, distinctly formed in that of Tertullian, and actually formulated in the Muratorian Fragment. But this notion of the Canon is not yet canonical. There is agreement as to central and even medial portions but the widest disagreement as to the peripheral, a difference of judgment that it will require long centuries to adjust.

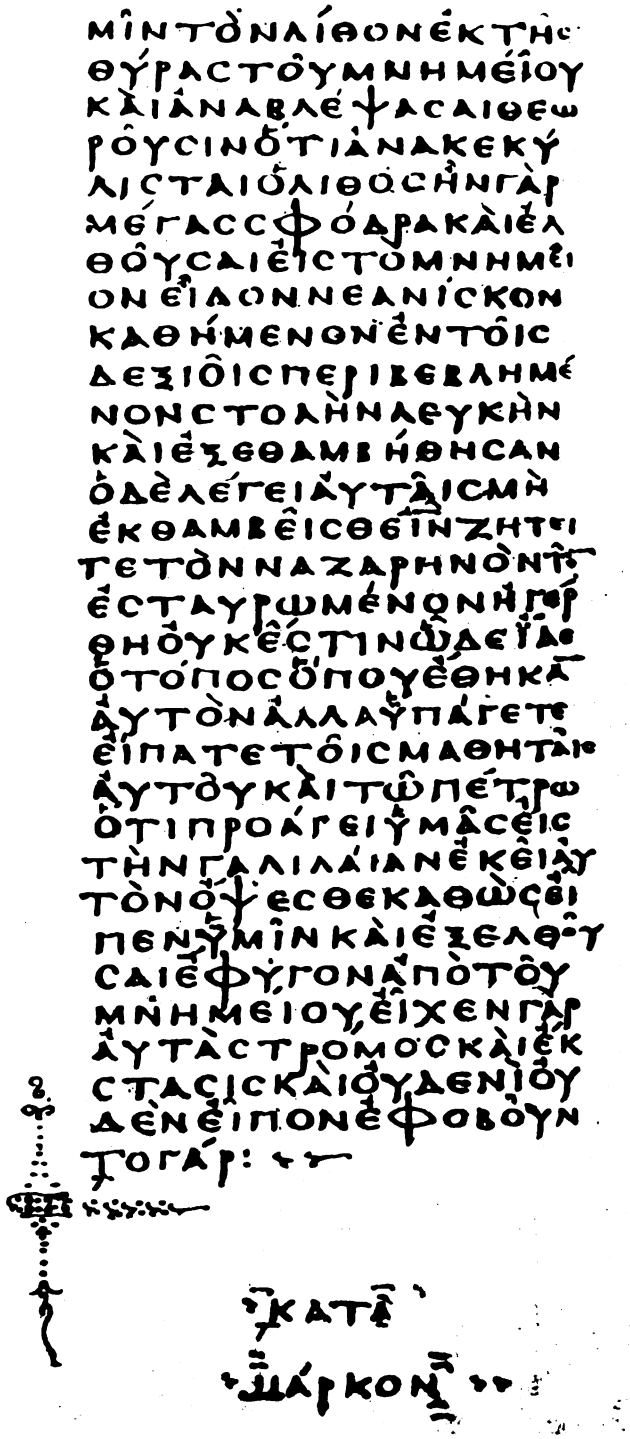
**Still Earlier.**— If now we ask, Had Irenæus no forerunners in his idea of a Canon? the answer must be: Assuredly he had; the law of continuity was not broken. Beyond doubt the composition of the "proof-documents" was gradual and their collection into smaller and then into larger groups was also by degrees. Backward from Irenæus, through two or even three generations, lies indeed a dark abysm of time, yet not wholly unlit of stars. To be sure, we find no certain conception of authoritative Christian writing. Scripture is the Old Testament only, in wider or narrower sense. True, the famous church letter of "the servants of Christ residing at Vienne and Lyons" to their Asiatic-Phrygian brethren, respecting the persecution in the year 177, does in fact say "that the Scripture might be fulfilled. He that is lawless, let him be lawless still, and he that is righteous, let him be righteous still" (Eus. 'Hist. Eccl.' V, ii, 58). But in spite of the just praise accorded this letter we really know nothing of its authorship, authenticity, or date; moreover, the citation sits loose and even jars in its context, without sufficient attachment either side; nothing suffers from its removal; it makes the impression of a pious observation of a copyist, which has crept from the margin into the text. Besides, it is quoted as a stock phrase, none knows whence, for in Rev. xxii, 11, it is also most probably not original but a quotation.

In the uncertain letters of "Theophilus to Autolycus" (173–90) there are two mentions of the "Gospel," in Book III, 13 and 14; the first is manifestly and the second very probably interpolated, as is also the phrase, "and in the Gospels," c. 12. But in any case, the text need not modify the foregoing.

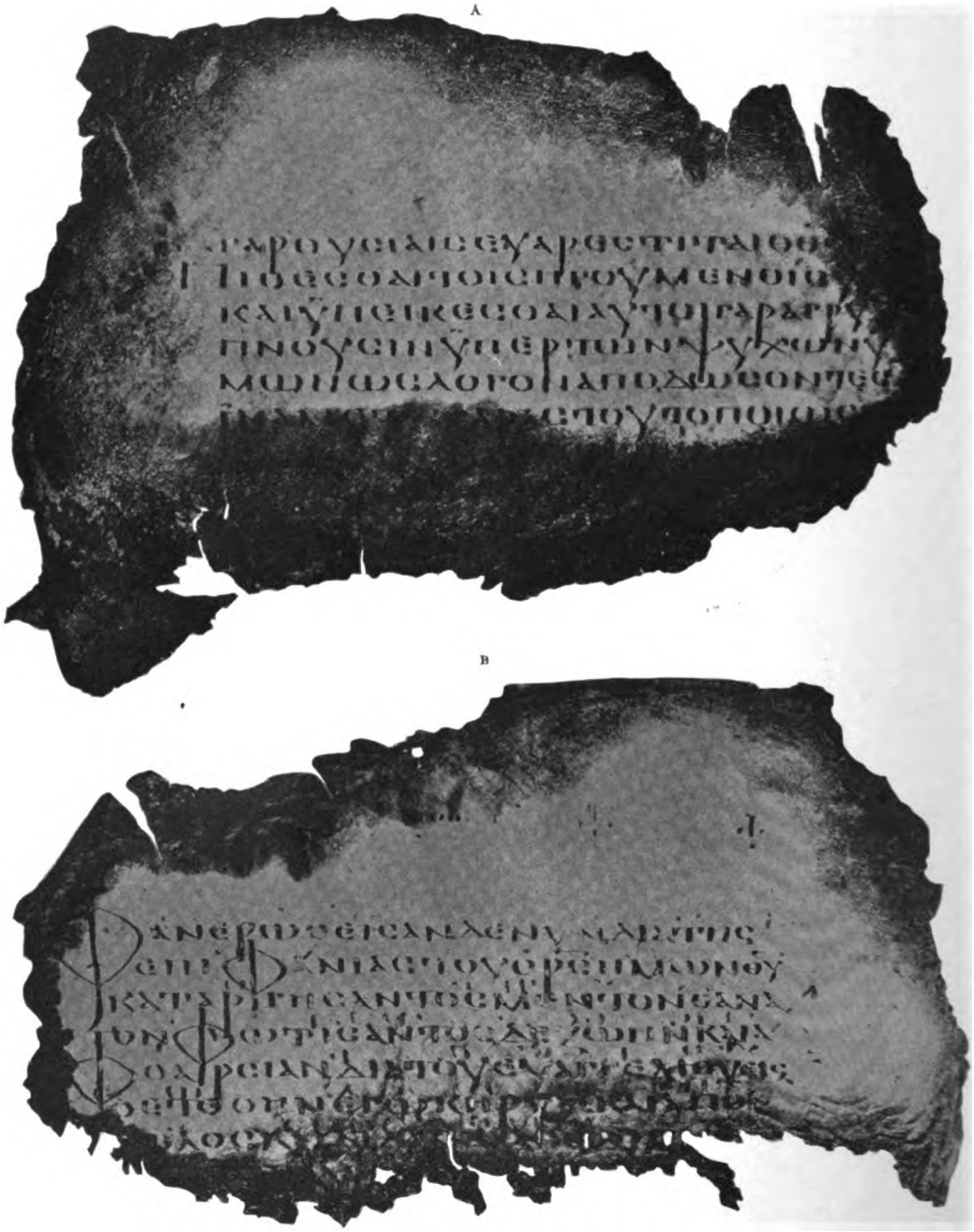
Nearest to Irenæus stands Tatian (160–80), who seems to have known of four Gospel forms and sought to blend them into one in his 'Diatessaron' (173?), in which scarcely any traces of the humanity of Jesus appear to have been found. His 'Address to the Greeks' (165?) contains sentences or phrases that are also found in the Gospels and Epistles, apparently the watchwords of certain religious or dogmatic tendencies, but none given as citations.

**The Martyr.**— Tatian's master, Justin Martyr, had considerable acquaintance with literature now found in the New Testament, but all of it seems to be floating as an unorganized mass (or rather as a meteoric swarm) in his mind. He never cites any such passage by the author's name, but ascribes them in the main to "the Lord" or to Jesus or Christ or the Saviour, most frequently omitting the subject "He." In Apology I, 66, and especially toward the close of the Dialog (cc. 100–07), he speaks of the "Memoirs of (or composed by) His Apostles." The phrase "which are called Gospels," in Apology I, 66, has long been felt to be interpolated, and so indeed is the whole chapter, which breaks visibly the connection between cc. 65 and 67. Again, that these Memoirs or Commentaries (*Apomnemoneumata*) should be mentioned 12 times in cc. 100–07, only in treating of Psalm 22, and not at all elsewhere in the Dialog, is surely extremely suspicious, suggesting easy interpolation, or a later date for these late chapters.* That Justin Martyr did not really refer to our Four Gospels seems clear for many reasons. Had he known of them under the names of Matthew, Mark, Luke, John, it seems practically certain that in the course of 120 allusions (50 in App., 70 in Di.), he would have named some one, for he is a stickler for names and exactness, as he conceives it. In citing the Old Testament he names the author 197 times, omitting the name only 117 times for various, mainly literary, reasons. He names John the Baptist repeatedly. He ascribes to "a certain man among us, by name John, one of the Apostles of the Christ, the Revelation that they who believed in our Christ should spend a thousand years in Jerusalem" (Di. 81); had he ascribed the Gospels and Epistles to authors, as Irenæus (Books III–V) and Tertul-

* Critics recognize Justin's text as strongly interpolated and it is antecedently likely that it would be, for his name was like the broad shield of Aias, from behind which Teukros winged his darts. Of 15 works ascribed to Justin, only *three* are now accounted genuine.



CODEX VATICANUS (B): MARK XVI.3–8
The Close of the Gospel. From Burgon's photograph of the page



A. Hebrews XIII, 16–18. B. II Timothy I, 10–12
6th Century
Washington MS. of the Fragmentary Epistles of Paul

lian did, it seems inconceivable that he would not have adorned his pages with their names. Moreover, it is certain that he drew from apocryphal sources, as from the Gospel of Peter; for both he and this Gospel (in the Akhmim fragment discovered 1885) use the strange word *lachmon* for "lot" in the casting of lots over the garments of Jesus, a word known there only to these two and to Cyril. Again, he says, "And fire was kindled in the Jordan" at the baptism of Jesus, as "wrote the apostles of him, this Christ of ours" (Di., 88), an incident noted in the "Preaching of Paul," the Ebionite Gospel, the Sibylline Oracles, and the Syrian Liturgy, but not in the New Testament.

Without going into further details, it appears manifest that Justin Martyr had before him, in writing or in memory, a considerable body of miscellaneous Christian literature, much of it perhaps under the name of Oracles (*Logia*) of the Lord or Jesus or the Saviour, some of it maybe professing apostolic origin or "gospel" character. Most of this has been taken up and organized in the New Testament, though some of it has failed of that honor; none of it did Justin certainly regard as inspired, canonic, authoritative; all of it he used or disused, and often misused, according to his own fancied needs in argumentation and his own sense of eternal fitness. The notion of a New Testament canon was unformed in the Martyr's mind.

**Others.**— If such was the case with this learned and zealous student between the years 140 and 166, perhaps about 147, it would seem almost needless to look unto lesser lights whether earlier or slightly later. However, a momentary glance at Athenagoras (176), the letter ascribed to Diognetus (200), Hegesippus (185?), and Dionysius of Corinth (170) discovers the same usage and state of mind as with the Martyr. The latter says, "there are many false teachers among us" "forging in His name" (Di. 82), and Dionysius makes similar complaint (Eus. Hist. Eccles., xxiii, 12): "My epistles have the devil's apostles filled with tares, cutting out some things and adding others . . . It is not strange then that some have essayed to adulterate the Lord's writings also"— a practice that pervaded all literary ranks.

**Apostolic Fathers.**— Ascending the stream we find Polycarp's Epistle (150–166) crowded with sentences and phrases now incorporated in the New Testament, but without any indication of their source, with no name of an author, with no hint of inspired or canonic character.

Of the other Apostolic Fathers, Clemens Romanus, Ignatius, Hermas, Barnabas and the Teaching, none have any idea of canon or authoritative scriptures besides the Old Testament, though they use many New Testament phrases and sentences apparently drawn from the common stock of religious feeling and expression. In Barnabas' Epistle (iv, 14) we read, "lest, as it is written, 'Many called but few chosen,' we be found." The five words agree exactly with Matt. xx, 16, but they are there also a proverb, whence quoted we cannot say. It seems certain that Barnabas (119?) is not citing Matthew as Scripture. It is common enough for him to quote from Scripture or prophets what we do not find therein.

**Collections.**—But while the notion of Canon first takes form in Irenæus and Tertullian, we may be sure there had been much earlier *collections* of Christian writings. Of one such we hear definitely, that of Marcion, who came to Rome a little before 140, having 10 Pauline Epistles and one Pauline Gospel, the relation of which to our present "According to Luke" has been a theme of elaborate discussion. Tertullian and the Catholics held it was a mutilation of their Lucan Gospel; unfortunately the Marcionite reply has not reached us. With respect to the Epistles the case is similar, but in any event the example of Marcion seems to have been widely followed and to have precipitated a battle of the books, whose echoes resound through the pages of Irenæus, Tertullian and others. The Gnostics were indeed the first scientific theologians of the new faith, copious writers, religious philosophers, keen-witted expositors, if too often lawless in allegory. They were the teachers of the most illustrious Church Fathers, such as Clemens Alexandrinus and Origen; with the former,— in whom "the modern theologian is disappointed to find very little of what he deems characteristically Christian," "Perfect Gnostic" means "perfect Christian," and Origen was a close student of the Gnostic Herakleon's Commentary on a John's Gospel (170?). Basilides was perhaps the deepest thinker, Valentinus the most constructive, as well as conservative, of the whole school. As these vigorous exponents of the *Gnosis* entered the fray armed with numerous collections of writings, among them certain forms of our present Synoptics as well as the Fourth Gospel, it became necessary for Catholic champions to meet them on even terms, with counter-arrays of authoritative writings, of proof-documents, the *instrumenta* of Tertullian. From this desperate and long-fought battle the Canon of the New Testament has emerged, in proof that "Strife is Father of All."

**Contents.**— To discuss the questions, What were the earliest contents of these documents? and, How were the Gnostic and the Catholic forms related to each other?, would carry us much too far afield, into the region of Christian Origins; but we may be sure that the extant forms are all developments of similar though simpler primitive forms that grew up under endless revision and re-revision through successive generations, each new growth displacing the preceding like leaves of the forest, so that from the short and pithy oracles that Polycarp and Justin love to cite, we pass over by a devious path into the continuous discourse of the Gospel of John:— though one must not think all the earlier forms were short; some long ones have doubtless been shortened and fitted with finer point and brighter polish.*

**Authorship and Date.**— It is not strange then that the query as to the date and authorship of many New Testament Scriptures should not be answerable in simple or positive terms,

* A striking characterization of the Gospel-Content appears in Canon Cheyne's review of '*Ecce Deus*' (*Hibbert Journal*, July 1913): "The Symbolism of the Gospels envelops a rich variety of thought. We may, however, appropriately describe these wonderful productions (including Acts) as allegories of the things relating to the God Jesus and the progress of his cult. Professor Smith has only been able to give specimens of the range of the symbolism, but these specimens are thoroughly adequate."

for they have not dates and authors in the ordinary sense of these words, having been molded gradually under many hands into their present forms. If date and author of a certain verse were proved ever so clearly, it would decide nothing as to the verses before or after. During those early centuries the Spirit, whether Catholic or Gnostic, was weaving and unweaving ceaselessly at the loom of speech, and the New Testament is the perfected garment, the fruit of its toil.*

**The Non-Canonics.**—But it must not be for a moment supposed that the finally rejected writings (however inferior to the Canonics) in any of their forms or stages are worthless or to be despised. On the contrary, their virtue is often exceeding great, the light they shed on the whole genetic process most welcome and even invaluable. They are like intermediate and collateral forms in fossils, without which the familiar types could not be understood. Again, it is absurd to suppose that the Gnostic variants were in general mere corruptions of an elder uncorrupted text. They were rather the honest expressions of another and often of an earlier consciousness. A single example of extreme importance may make this clear. In Matt. xi, 27 (Luke x, 22) are the weighty words: "no one knoweth the Son, save the Father; neither knoweth any the Father, save the Son, and he to whomsoever the Son willeth to reveal." So it stands in Matthew, Luke and Mark, says Irenæus (IV, II), but he charges that they who wish to be experter than Apostles write it thus: "No one knew the Father save the Son, nor the Son save the Father, and he to whomsoever the Son willeth to reveal"; and at first the charge sounds plausible, since the former seems more natural. But Irenæus himself in Book I, 13, gives the Gnostic form without protest and argues therefrom; and again in Book II, 4 he quotes the same as his own in the Gnostic form (with only *knows* for *knew*), and again (Book II, 18) he quotes twice the Gnostic "No one knew the Father," uncomplaining. Thus it appears that in Books I and II he makes no objection to the Gnostic form but sanctions it by his own use, seeming to know no other; which is confirmed by the fact that when he requotes the passage in Book IV, xi, 5 he not only gives but repeats and emphasizes the Gnostic form "shall have revealed" (*revelaverit*), instead of the orthodox "shall have willed to reveal" (*voluerit...revelare*). Hence the vehement churchman and heresy-hunter Harvey admits in a note (II, 162): "It is remarkable that this text, having been quoted correctly at page 158, the translator now not only uses the single verb *revelaverit*, but says pointedly that it was so written by the venerable author. It is probable therefore that the previous passage has been made to harmonize with the received text by a later hand."

**The Gnostic Form Order.**—When now we recall that in a Syriac Fragment (XVI) Irenæus himself again quotes the verse and again in the Gnostic order of words with the "single verb," declaring "Our Lord said: None knows the Father save the Son nor the Son save the Father and to whomsoever the Son shall have revealed"; moreover that Justin quotes the passage *first* (Ap. I, 63) exactly in the Gnostic form, and afterward (Di. 100) again in the same form, with only *knew* changed to *knows*, and that Eusebius ('Hist. Eccles.' I, 2) again confirms the Gnostic order of words, as well as still other Fathers, it seems that Harvey's "probable" must be changed to certain, that the Gnostic was the older form, which Irenæus along with Justin accepted at first, but which afterward it was found wise to "harmonize" with Church doctrine by changing it into the "received text." That this elder form agreed with the Gnostic in giving *knew* and not *knows* is now clearly shown independently by both Harnack ('Sprüche u. Reden Jesu,' pp. 189ff., 1907) and E. Norden ('Agnostos Theos,' pp. 279ff. 1913). An "elder form," not a better, and by no means the eldest, which was doubtless much simpler. Wellhausen has perceived that the clause "no one knows the Son save only the Father" is "a very old interpolation. It is a corollary, must therefore not stand in the first place and can nevertheless not be put in the second" (D. Ev. Mt., p. 58). The whole passage (Matt. xi, 25–30, Luke x, 21f), among the most famous and important ever written, reaches far back of our Gospels or even our era;* in 'Ecce Deus' (p. 118) it is called "the great Gnostic Hymn," and again (p. 166), "these rhythmical and almost metrical verses" are "the voice of Wisdom," and two years later, in 1913, Norden proved as much by a profound analysis ('Agnostos Theos,' 277–308), and this conception is now adopted by Bacon in 'Christianity Old and New' (1914): "there is placed in the mouth of Jesus a typical Hymn of Wisdom" (p. 164).

**Later Growth.**—When now we glance once more from this specular mount of history, the junction of the 2d and 3d centuries, down the stream of years, we behold the notion of the Canon indeed firmly fixed, but the borders still vaguely defined, uncertain, unsteady. Of the Fathers, Cyprian followed Tertullian as his "master"; Origen (as we have seen) indeed attempted scientific criticism but without ade-

* How much was or could be known of Gospel authors is shown by the following: Eusebius (H. E., iii, 39) says that Papias, bishop of Hierapolis, said (in his five books of 'Exposition of Dominican Oracles'), "This also the Elder said: Mark, having become Peter's interpreter, wrote carefully whatever he remembered, tho not indeed in order, the things whether said or done by the Christ." Again, "Matthew accordingly compiled the oracles in the Hebrew dialect, but each interpreted them as he was able." Now Eusebius, a thorough master of tradition, in his great History has amassed the best he could learn, especially on such a critical point; moreover Papias was a restless tradition-hunter, and what the Elder said was surely the best that Papias could find; these traditions, then, must count as the best that Eusebius and Papias could unearth. Yet critics assign them little worth, as applicable to neither Gospel as it now is (see Schmiedel's 'Gospels', Enc. Bib., § 148 p. 149). But even if they fitted exactly, the case would hardly be altered; for the fact that Eusebius could give only the word of Papias, who could report only the word of an unknown Elder, shows that there was no real knowledge on the subject, but only the best conjecture the Elder could make. With respect to the other Gospels, the indication is, if possible, even less. But it is no reproach to these wonderful works, nor to Iliad or Odyssey, that their authors are unknown. Rather, as in case of nearly the whole Bible, it is the fact that they mirror not any individual consciousness but a collective consciousness, whether of a race or of a Church, that makes them both Catholic and Canonic.

* With v. 27 compare the words of the first great monotheist Ikhnaton (1370–50 B.C.) in his Hymn to the "Sole God beside whom there is none other:"

"Thou art in my heart,
There is none else that knows Thee,
Save Thy Son Ikhnaton."

quate principles to guide him; Church tradition was empirical and often inconsistent, inspiration was not determinable. Slowly during the 3d century the mantle of the Canon was widened. At length, in 363, the Council of Laodicea by its 59th canon enacted that "only the Canonics of the New and Old Testament" be read in the Church, but "not private psalms nor uncanonized books"; the 60th canon, which follows with a list, has been shown by Credner to be not genuine but of much later date (G. d. nt. K., 217ff). The *Apostolic Constitutions* (viii, 47, 85) gives the Old Testament list of "books to be esteemed venerable and holy" by "all you both clergy and laity" (adding, "See that your young men learn the Wisdom of the most learned Sirach"), and names as "our sacred books" "of the New Covenant" "the four Gospels, fourteen Epistles of Paul, two of Peter, three of John, one of James, one of Jude, two of Clement, and the Constitutions dedicated to you, the Bishops, by me, Clement, in eight Books, which it is not fit to publish before all, because of the mysteries contained in them,—and the Acts of us, the Apostles," omitting Revelation. Cyril of Jerusalem (348) in his list of divine Scriptures includes "Baruch and the Epistle" with Jeremiah and also omits Revelation. At last the archbishop of Alexandria, Athanasius, in his 39th Festal Epistle (367), determines as "canonized and handed down and believed to be divine" 22 Old Testament books (excluding Esther) and our present New Testament exactly; but he still quotes Apocrypha as "Scripture" and allows them to be "read." The great authority of Athanasius finally prevailed, though various fluctuations lingered long in the judgment of the Fathers.

**East and West.**— In the West the councils swayed by Augustine, though somewhat more liberal toward the Old Testament, yet fixed the New Testament as at present. Meantime the Syrian Church inclined to a narrower conception of the Canon. The Common (Peshitta) version, omitting the Apocrypha at first, admitted them later, but in the New Testament it lacked four Catholic Epistles and the Apocalypse, all of which, however, were used by Ephrem. Like Origen, the Syrians (about 500) divided the Scriptures into authoritative, semi-authoritative and unauthoritative. In the mid-class, beside Job, Chronicles, Ezra, Nehemiah, Esther, Judith, 1 and 2 Maccabees, were found James, 2 Peter, Jude, 2 and 3 John,—and Revelation was much debated. Armenian and Abyssinian canons show many minor eccentricities of no great interest or importance.

**Still Later.**— During the Middle Ages the Eastern canon alternately expanded and contracted from time to time under various hands, but these variations about balanced each other. Meanwhile in the West the pendulum trembled between the stricter view of Jerome and the laxer of Augustine, till the day of Luther, when the Catholic sided definitely with the latter and the Protestant with the former. In dealing with the New Testament also Luther showed a similar spirit, reviving the Eusebian distinction between *Accepted* and *Contradicted*, and ranging among the latter the Apocalypse, Hebrews and the Epistles of Jude and James, which last he called a "straw-epistle," an uncritical judgment determined by his dogma of "Justification by Faith alone," against which James had protested, and which, as it existed in the early Christian consciousness, the Reformer had wholly misunderstood. But his work was invaluable in partially freeing the Christian mind in the presence of the Canon. His notion of degrees of inspiration, authority, dignity among the Scriptures* has been followed up by many theologians and has even found its way into various creeds and confessions; but it makes a vain distinction leading nowhere and logically worthless. Better reasoned were the decrees of the Florentine, Tridentine and Vatican Councils (1441, 1546, 1870) and of the Jerusalem Synod under Dositheus (1672), which threw the robe of the Canon over all the Deutero-canonics. Of absolute authority there are no degrees.

### Text Criticism.

Modern thought accepts the millennial debate over the Canon as an interesting phase of the history of spirit, but turns its own attention to a far deeper question, as to what the remarkable literature thus canonized really is, or, What is the TEXT of the canonical scriptures?

It was the learned Jerome, a critic born out of due time, who first consciously confronted this query, when he came to translate the Hebrew into Latin. His notion, that only the original script itself is inspired and authoritative, has maintained itself to this day, when it is still widely prevalent, though criticism long since perceived it to be wholly illusory. More sanely the Council of Trent (1546) declared that canonicity and authority reside in the Vulgate translation used in Church Service.† It would indeed be vain and nugatory for authority to reside wholly in the Hebrew text, which extremely few could read if ascertained, and which could not really be ascertained at all. Of what use a Supreme Court inaccessible to appeals? Nevertheless, though the Council has wisely closed the question for the faithful, it still remains open for unfettered critics: What is the Text of the Scriptures? What in their own tongue do they really say?

### The Old Testament.

**The Original.**— The Old Testament was composed and is extant in the Hebrew, ex-

* Luther's view as given at close of the Preface to his Translation (1st ed., omitted from later eds.) appears very extreme: "From all this you can rightly judge between all the books, and distinguish which are the best. For St. John's Gospel, and St. Paul's Epistles, especially that to the Romans, and St. Peter's first Epistle, are the true marrow and kernel of all the books; which properly also might be the first, and each Christian should be counseled to read them first and most, and make them as common by daily reading as his daily bread . . . briefly St. John's Gospel and his first Epistle, St. Paul's Epistles, especially those to the Romans, Galatians, Ephesians, and St. Peter's first Epistle: *these are the books that show thee Christ and teach all that it is needful and blessed for thee to know, even if you never see or hear any other book, or any other doctrine.* Therefore is the Epistle of St. James really a straw-epistle compared with them, for it has no character of the Gospel in it." The ground of this unjust judgment of James is really what makes the latter one of the most valuable and enlightening of the early Christian documents.

† To the same effect, the Complutensian Polyglot of Cardinal Ximenes (which, leaving the press 10 Jan. 1514, was published in 600 copies, 1522) presented the Latin bordered by Greek and Hebrew, symbolizing (it was said) the Roman Church between the Orthodox Greek and the Synagogue, like the Crucified between the two thieves.

cept certain small portions (Jer. x, 11, Ezra iv, 8—vi, 18; vii, 12–26, Dan. ii, 46—vii, 28) written in Aramaic or Chaldean as sometimes called since Jerome (because used by the Chaldeans in the speech reported in Dan. ii, 4ff.). Hebrew was the language of Canaanites, called "lip of Canaan" (Is. xix, 18) but also *Jewish* (in Judea, 2 K. xviii, 26, Neh. xiii, 24), from the 5th century B.C. on, gradually displaced as the vernacular by the kindred Aramaic (called *profane* in contrast with the holy but obsolescent Hebrew, and displaced in turn by the conquering Arabic, 7th century). The term *hebraisti* ("in Hebrew") occurs first in Scripture in Ben Sirach's Prolog (117 B.C.), long after the eclipse of Hebrew, and is used often for the profane, sometimes for the holy tongue. Both belong to the grand group of languages (called Semitic by Eichhorn), between whose two chief representatives, Assyrian north and Arabic south, the Hebrew lies in the middle, somewhat as Dutch between German and Old English. The main mark of these tongues is that the stems consist nearly always of three consonants, whose vocalizations vary from shade to shade of the radical idea. Vowels being unwritten, the text was purely consonantal, as if one should write *r g d* and pronounce it raged, rouged, ragged, rugged, rigged, rigid, according to sense, or *f r m* and pronounce it farm, frame, firm, form, from, forum, or even affirm—a fact of fundamental importance.

**The Masoretic.**—The earliest text of at least the oldest Old Testament Scriptures was in the Canaanite Script (called *Ra'atz,** or Libona'ah by the Rabbis), of which six lines dating apparently from Hezekiah's reign (ca. 700 B.C.), discovered (1880) in a tunnel of the Siloam pool, resemble that of the Moabite Stone, though slightly more cursive. The oldest known specimen of what developed into the present Aramaic script (*kethob,* called by the Rabbis *merubbd,* square, or *Asshuri,* Assyrian) is a single word of five letters, discovered at Araq-al-amir (former castle of Hyrcanus, east of Jordan), dating from 176 B.C. Somewhere about this time the portions of the Old Testament then existent were copied from the Canaanite-Moabite form into the oldest form of square script. It was impossible that minor mistakes of copying should not creep in, and as many copies were doubtless made, a somewhat uncertain form of text must have resulted. Whence, then, came the standard consonantal Hebrew text? From a critical comparison of various copies? By no means! Some one copy was adopted, what one we know not, for reasons also unknown. This text thus chosen was long afterward regarded as sacrosanct, not to be altered in a single Jod ("or tittle," *keraia,* "horn," is apparently interpolated, Mt. v. 18). As the ancient holy tongue sank lower in the consciousness of the people, the guardians of tradition (Massorah) devoted themselves to preserving the text inviolable not only in letters but also in pronunciation, and accordingly from the 5th century on they intervocalized the text with a system of vowel signs (derived from the Syrian?),—as if we should write p$^{e}$rm$^{a}$n$^{e}$nt or pr$_{o}$m$_{i}$n$_{e}$nt or pr$^{ee}$m$_{i}$n$_{e}$nt—at the same time interpunctuating with an elaborate system of signs as guides to proper cantillation. Thus they superposed a vowel text upon the adopted consonants and therewith established for millenniums an interpretation thereof. Moreover, they not only vocalized, but also verbalized, for the earliest manuscripts were doubtless written continuously without any evident division into words, as if thus: Yhvhthstsrcdmndknntm (Yahveh, thou hast searched me and know me).—Three systems of such signs are now known, Babylonian, Palestinian, Tiberian, developed between 500 and 900 A.D. But much earlier a number of so-called vowel letters (consonants tending to quiesce into vowels, as in English *draw, dray,* from drag; *plow, though,* etc.) had been introduced as guides to vocalization, though forming no part of the earlier text, so that wherever such a letter is present the question may be raised, Is it original or a Masoretic insertion? The oldest dated manuscript of this so-called Masoretic Text (denoted by MT) is the Codex Babylonicus Petropolitanus of 916 A.D., but a very few others may be a century older. In any case it would seem that the Masorites have handed down with remarkable accuracy and fidelity the text that had established itself with the sturdy Rabbi Aqiba (d. 132 A.D.). Where they felt called on to suggest a new reading, they did so by keeping the old consonants (the *"k'thiv,"* written) and writing with them the vowels of the suggested consonants written in the margin and called *Q're* (legend, to be read). They also made many other minor emendations of little interest except as evidence of painstaking study and unspeakable devotion.

**Variants.**—But before Hadrian's time or the death of Aqiba, there was no small diversity in the numerous copies of the sacred consonantal undivided text, a fact attested in many ways. What copy Aqiba chose and why he chose it, no one knows; perhaps it was merely the best written that was accessible. We may be sure there was no critical adjustment of contesting claims, for the means thereto were wanting. Accordingly, to rely on the printed pointed text is to rely on a Masoretic interpretation of an unknown square Hebrew copy of an unknown cursive Canaanite text. It is not strange that Protestant scholarship, represented especially by the Swiss lexicographers, the Buxtorfs,* long held to the inspiration and divine authority of the Masoretic points as well as of the consonantal text; for it seemed to be the sheet anchor of the whole doctrine of verbal inspiration,—a position long since abandoned. It now seems to be no radicalism but merely common sense when Kittel in the Preface to his 'Biblia Hebraica' raises at the start the question whether to attempt a continuous emended text (such as may have existed 300 or 100 B.C.) or to use the Masoretic as the base, subjoining emendations in footnotes. Though he decides for the latter, the former remains the goal of further study.

* I. e., "broken, splintered," a name well-fitting but probably corrupted from *da'utz* (pricked, chiseled), whence the term *deessenon* used by Epiphanius (Migne, 'Patr. Gr.' 43, 356).

* Who leaned on the learned Jew Azariah dei Rossi, whose 'Light of the Eyes' (1575) referred the vowel-points back to Adam.

**Septuagint.**— The means that help mightily forward are the existing versions in other tongues. Made at various periods over a long stretch of time, these are now considered invaluable in establishing the pre-Christian Hebrew text. Oldest and most authoritative is the so-called Septuagint (LXX), so named from the story related at much length in the romantic 'Letter of Aristeas,' of how Ptolemy Philadelphus (283–247 B.C), at the suggestion of his librarian, Demetrius Phalereus, wishing to gather all literature into his library at Alexandria, called by embassy on the Jews for their sacred books in a Greek translation, and how the High Priest Eleazer at Jerusalem replied by sending him 72 experts, six from each tribe (as requested), who were then, after preliminary seven days' symposium, dismissed each to his own hut on the Island of Pharos, where each made independently his translation, and finally on comparison it was found they all agreed exactly, whereupon, by unanimous approval of Alexandrian Jews, the translation was proclaimed canonic, henceforth to be received as authoritative, with a curse against any modification (as in Rev. xxii, 18, 19).

**Its Origin and Character.**— Back of this extravagance (describing everything as indescribable), which indeed refers to the Law only and is marked at every step by ample archæological knowledge and a plentiful display of local color, there may lie some semblance of the fact that there was a felt need for a Greek translation of the Scriptures, felt however among the Jews themselves, though their instruction in Holy Writ was oral, and the translation may have begun as early as 260 B.C. and extended slowly from book to book through two or three hundred years. The presence of many hands is indeed not doubted, the character of the version varies within wide limits in different sections: Sometimes it is almost word for word, as in the Song of Songs, in Chronicles, in Ecclesiastes; again, it is exceeding loose, with considerable apparent additions, as in Daniel and Job. The more narrative portions, especially the Pentateuch, seem to be rendered best, while the chief Prophet, Isaiah, has suffered most. The change in style becomes most notable on comparing younger with older portions. In general there is fair agreement with the MT, which, however, does not exclude disagreement at countless points to indefinite extent. In the Pentateuch the conformity is in general good, but toward the close of Exodus (cc. 35–40) the departures grow wide and frequent, both in words and arrangement, an indication of late composition, the text having not then attained a fixed form (p. 614)). Still more marked the divergencies in Samuel, Kings, Job, Proverbs (particularly in the order), the Prophets, as Ezekiel, and most of all in Jeremiah, where many chapters are differently numbered, with a total of some 2,700 words wanting. Such variations show clearly that another Hebrew text, in general shorter than the Masoretic, underlay the Septuagint, which indicates that in the border centuries (150 B.C. to 150 A.D.) the Holy Writ was still alive and undergoing development. Occasionally the translators ventured to go beyond the (present) Hebrew text; thus they added considerable to Daniel, from what Hebrew original, if any, cannot be said.

**Its Text.**— The Septuagint is probably the first translation of large scope that was ever undertaken, and its importance, notable then, has even to the present remained scarcely diminished. It gave a distinct stamp to all Biblical Greek, supplies even now the clew not only to the New Testament but to all Greek literature kindred and derived, and is the most trustworthy collateral witness to the contents of Hebrew Scriptures in the two centuries immediately before our era. Accordingly, it becomes a matter of signal interest to determine just what this translation was in its original form,— but at the same time a matter of perplexing difficulty. The manuscript and testimonies do indeed vastly abound,— as seen in the fact that the critical apparatus (of 20 uncials and 277 cursives) amassed by Holmes and Parsons fills five huge volumes (1798–1827),— but their witness is inordinately contradictory and uncertain. Indeed the problem proper of the Septuagint, so brilliantly attacked by Lagarde in his 'Remarks on the Greek Translation of Proverbs' (1863), remains yet one of the most embarrassing in textual criticism. The reason for this should be briefly stated.

**Other Versions.**— Under the Roman irritation and especially after the destruction of Jerusalem by Titus (70 A.D.), as the national Jewish feeling became extremely intense, the cleft opened between the Jewish consciousness and the Christian widened, through two generations, into a chasm in the time of Hadrian. The Jewish race, recoiling from its pagan environment, fenced itself more and more firmly within its own institutions, especially its religious and sacred books, becoming a stricter and stricter constructionist. The highest impersonation of this tendency was the illustrious Rabbi Aqiba. Inasmuch as the Christians depended almost wholly on the Septuagint, the latter became unpopular with the Jews, not solely because of its inaccuracies and divergencies from the synagogal text. Hence arose a demand for a new and faithful rendering of the latter, since the dispersed Jews could not now dispense with a Greek translation. This demand was met (about 132?) in the spirit of Aqiba by the version of Akyla (Aquila), slavishly faithful, turning the Hebrew word for word. Meantime it was widely perceived that the official Palestinian text could not be that used by the Seventy, and accordingly still other translations of the former were now undertaken, as by Symmachus and Theodotion into Greek, and also into Syriac (Peshitta). The version of Symmachus is highly praised by the Fathers for its elegance and clarity,— in contrast with Akyla's, often obscurer than the original; Theodotion's is thought to display a rather inferior scholarship.

**The Hexapla.**— Here, then, were four versions, and more than one edition of some, often widely divergent. Such apologists as Justin, assuming that the Septuagint was perfectly made from a perfect text, charged the Jews with corrupting their own Scriptures; others assumed (with many generations of moderns) that the Palestinian was the true aboriginal and hence discredited the Septuagint and other ver-

sions, and Origen even proposed to himself the superhuman task of making a collation, at first in four, then in six (or even in nine) parallel columns, of the Hebrew (in Hebrew and also in Greek characters), of Aquila's, of Symmachus,' of the LXX, and also of Theodotion's translation, a formidable array of deadly parallels, called the *Sextuple* (*Hexapla*). The Septuagint he then corrected as seemed best, prefixing an asterisk (*) to each insertion and an *obelos* (†) to each deletion, and suffixing a *metobelos* (+) to each of both,—a scheme that could be carried out only very imperfectly.

**Chaos.**— The example and authority of Origen stimulated to endless attempts at improving the Septuagint, all of which ended in making confusion worse confounded. Half a century after his death (254) three main types of text appeared and established themselves on the eastern coast of the Mediterranean: as named in order by Jerome (Preface to Chron.), that of Hesychius in Egypt, of Lucian in Asia Minor from Constantinople to Antioch, of Eusebius and Pamphilus in Palestine, this latter being really Origen's fifth column; and the most, but not all, of the manuscripts still fall under these three types.

**Targums.**— Still another, though far inferior, index to the old Hebrew text, is found in the Targums, or Aramaic paraphrases of the Old Testament Scriptures. The two most important are those of Onkelos* and (Pseudo-) Jonathan, the latter called Palestinian. But the former is by far the more valuable, because of its fidelity to the Hebrew, whereas pseudo-Jonathan† has adorned his scroll with all manner of more or less vivid pictorial additions and elucidations. Thus he assures us, "the Lord made the firmament, poising it with his three fingers," and to the serpent is said, "thy skin thou shalt cast off once every seven years"; in this way the text is expanded by nearly one-half, a fact that is interesting as showing a manner of literary growth. The Targums attest the Hebrew text as it was expounded to the people of the 1st century of our era, and in parts perhaps two centuries earlier.‡

**Samaritan.**— Still further, the Samaritan Pentateuch, i.e., the Hebrew text in Samaritan characters, as current among Samaritans, is an important witness to the text of the Law. First brought from Damascus to Europe in 1616 by Pietro della Valle, it has long been a bone of bitter but indecisive contention. At many points diverging from the MT, it agrees with the Septuagint at many, but critics still debate whether it represents a truly different tradition or only a faulty retranslation from the Greek. Its witness is by no means yet proved negligible, but rather gains steadily in consideration.

**Progress.**— Armed with all these and many other helps,* and embarrassed by so many mentioned and unmentioned difficulties, the textual critic strives with the question, What was the earliest written form of the Hebrew Bible? He is very far yet from being able to give an entirely satisfactory answer; at the same time it cannot be denied that he has made memorable advances along a path where he will hardly have need to retrace his steps. Knot after knot has been untangled, obscurity after obscurity cleared up, and a broad light diffused over the sacred page. True, the solution of one problem is often found to open up a still profounder problem, and doubtless many surprises are yet in store for the student; but enough has been securely fixed to make the need for a new version of the Old Testament as imperative now as it was before the revision of 1885. To convince oneself, it should be enough to compare the successive editions of the noble work of Kautzsch and his co-workers, 'Die Heilige Schrift des Alten Testaments,' first issued in 1890, then in 1894, of which—so rapid was the encroachment of new knowledge in this ancient demesne—it was found necessary in 1909–10 to issue a third "völlig neugearbeitete" edition.

**Conjecture.**— At the very best, however, when all the documentary aids have been exploited to the utmost, there will still be a considerable residuum of dissatisfaction. Often enough the critic must feel that the text before him, in none of its attested forms, can be the original, that some primitive error lies still farther back, disturbing or hiding the sense first intended. His plight is that of the physician who divines some deep organic malformation or perversion, which nothing but the knife can relieve. In such a case the textual critic is driven in last resort to *conjectural emendation*, "not only a right but a duty of the exegete" (Dillmann, 'Bibeltext,' in P R E). His own spirit thoroughly saturated with his author's modes of thought and expression, he must *divine* what the latter would have said in the context, under the ascertained conditions of language and feeling. Of course, conjectures will almost surely go astray,—there is only one way to be right, many ways to be wrong. However, there will be a thousand of the critic's peers, all eager to detect and expose any error he may commit. Hence, his mistakes, though many, will be harmless, while his guesses, though few, that command acceptance, will be so many points of vantage gained in the slow campaign of science. Conjectural emendation must then be reconciled to frequent failure and rare success, but the latter may be like the lucky number in a lottery, of priceless value.

**Text-emenders.**— Such textual reconstruction has been plied by Bickell and Duhm and others under guidance of metrical considerations, and by the pioneer Cheyne in the interest of his North-Arabian theory (adopted from Winckler), as the majority believe, to an excessive extent. To what lengths a sober editor may find himself led to go may be seen in Karl Budde's booklet, 'Die schönsten Psalmen,

* This name is most probably only a disguise or corruption of Aquila, the result of a confusion of two very different works of translation.

† A mistaken form for Yerushalmi. The Targum of the true Jonathan ben Uzziel (a pupil of Hillel) is of the prophets only and departs widely from the MT and the interpretation of the scribes.

‡ It is reckoned (by Turpie) that of 278 quotations of the Old Testament in the New Testament, 10 agree with MT only, 37 with LXX only, 53 with both, 175 with neither, 3 have no originals in our Old Testament; whence Böhl, Neubauer, Toy, and others infer that the New Testament never quotes from the Hebrew text but always from some Targum.

* Even the book of Jubilees (or Little Genesis), of the 1st century B.C., enables R. H. Charles to correct the MT of Genesis in 25 places.

übersetzt und erläutert,' on the basis of a revised text, and the nature and extent of this revision of 51 short Psalms Budde has set forth in the *Zeitschrift für die Alttestamentliche Wissenschaft* (pp. 175–95, November 1915). Plainly we are yet very far from having attained a satisfactory (original) text of the Hebrew Scriptures, but this fact weighs comparatively little against the literary worth, the historic value and the religious significance of these writings.

**Illustrations.**— A striking example of the false vocalization of the consonantal text is the following: In Jer. xvii, 9, occurs the familiar pronouncement, "The heart is deceitful above all (things) and desperately wicked; who can know it?" The word rendered "desperately wicked" is in consonants *' - n - sh*, vocalized by the Masorites, *'a-n-u-sh;* but the Septuagint evidently vocalized it *'e-n-o-sh* (man) and accordingly translated thus: "Deep is the heart beyond all things, and is man, and who shall know him?" Strange as it may sound, it was accepted, and when Irenæus was challenged by the Gnostics to prove the humanity of Jesus, he appealed (IV, 55) to this passage: "Again there are those [prophets] who say, He is a man, and who shall know him? [Homo est, et quis cognoscet eum?]" Again in Hos. vii, 6, we read: "Their baker sleepeth all the night; in the morning it burneth as a flaming fire." Here the letters '-p-h-m have been pointed to read *'ophehém*, but on reading *'app'hem* (with Targum and Syriac) we obtain the couplet:

> All the night smoulders their anger,
> Mornings it burneth like flame of fire.

The change of "anger" into "baker" (in Hebrew) is like turning "ripple" into "rifle" in English. Once more, the consonant-group m-z-r-y-m, as vocalized in the MT, is pronounced *Mizraim* and translated Egypt, the apparent dual ending being referred incorrectly to Upper and Lower Egypt. In Assyria on the monuments it appears often, in various forms, as Mizir, Mizri, Muzri, Muzur, Muzuru, with many cognates, and means apparently border, frontier. As early as 1834, Dr. C. T. Beke deduced from Exodus that Mizraim was not always Egypt, but like so many Anglo-Saxon seeds of thought, this fell among thorns and was choked, though noted by Ewald. In 1874, Schrader renewed the observation, but not till about 1890, in a series of memoirs, did Winckler make clear from the inscriptions the existence of both a North-Syrian and a North-Arabian Muzri, which required the frequent change of the Masoretic vocalization from *Mizraim* to *Mizrim*, and draws along with it a series of revisions both of the Hebrew text and of our whole conception of Israel's history. In particular, Winckler, followed by Cheyne, would find in this confusion of the two Muzris the single and simple origin of the legend of Israel's sojourn on the banks of the Nile. Still further, to understand what Cheyne's general text-revision ('Critica Biblica') may accomplish, consider, not indeed the mere jumble of words in the Authorized Version, but the much improved American Standard Version of Is. vi, 3. "And if there be yet a tenth in it, it also shall in turn be eaten up; as a terebinth, and as an oak, whose stock remaineth when they are felled; so the holy seed is the stock thereof." But the amended text yields this quatrain:

> And should there yet be a remnant therein,
> It shall again be destroyed.
> For consumption shall be on its plants,
> And failure of fruit on its sprouts.

A few among countless such examples may show at once the importance, the difficulty and the necessity of a reconstruction of the Hebrew text.

### The New Testament.

How stands the case with the New Testament? One might suppose its problem would be less complex, less difficult to grapple and master, on account of the abundant material of evidence; but it yields no whit to the other. The so-called critical apparatus is indeed so enormous in extent as to be hard even to name for ready reference. It consists wholly of three kinds of manuscripts: (1) The Greek text itself; (2) translations into various other languages; (3) quotations in a multitude of authors. Of these the first might appear to be prepotent, but such is by no means always the case. The manuscripts, very numerous, are rarely of the whole New Testament (only about 167), more often of only some sections thereof, most frequently of the Gospels (1,277), then of Acts and Pauline Epistles (32), then of Acts and Catholic Epistles (25). Many are only small fragments, scattered through the centuries (as well as the libraries) from the 4th to the 17th, and a few pieces of papyrus, each containing but a few verses (over 40 in all), may date from the 3d century. In form they are of two grand types: uncials, up to the 9th century, and minuscules from the 10th century on. In general the material is parchment or vellum up to the 13th century and after the 14th paper. Of course the authority of the eldest is in general by far the weightiest, but not necessarily decisive.

**Notation.**— The system of naming the manuscripts, introduced by John Jacob Wetstein (1693–1754), designates the uncials by capital letters (Latin, Greek, Hebrew), the minuscules by Arabic numerals; it has been most fully developed by F. H. A. Scrivener (1813–91) and by Tischendorf's successor, C. R. Gregory (1846–1917), whose notation supplants Scrivener's. But as new discoveries multiply the manuscripts, the letters become insufficient in number and at best such designations are purely formal and tell nothing at all about the manuscripts themselves. Hence Hermann von Soden has proposed (1902) a wholly new system of co-ordinates sharply defining the manuscript itself. He makes three grand divisions, according to the contents of the manuscript, denoted by $\delta$ (for *diatheke*, Testament), $\varepsilon$ (for *evangelion*, Gospel) and $\alpha$ (for *apostolos*, Acts — Epistles), the presence or absence of the Apocalypse not affecting the denotation. The second co-ordinate is a number naming the century, the numbers 1 to 49 being assigned to the first nine centuries, those from 50 to 99 to the 10th, the higher numbers to the later centuries, the third digit denoting the centuries after the 10th (as 4 the 14th) and so on. Owing to further distinctions in centuries where the number of manuscripts is very large, especially in the 12th and 13th, the denotation becomes elaborate and somewhat

cumbrous, but it tells the utmost possible by a few signs and is extensible to any number of manuscripts likely to be found. However, for the most important and familiar codices, the current Wetstein-Gregory notation remains preferable. B and D are more manageable than $\delta$ 1 and $\delta$ 5, and E than $\alpha$ 1001.

**Text.**— Criticism of the New Testament text, the attempt to restore the supposed original, after valuable preliminaries by Mill (1707), in Bentley's 'Proposals' (1720), in Bengel's 'Introduction' (1734), in Wetstein's huge edition (1751–52), a priceless repertory of classical and other citations, and by J. S. Semler (1725–91), began in grave earnest with the labors of Griesbach (1745–1812), which came to light in his three-volumed critical edition of the New Testament (1774–75). It was he that first divided the manuscripts into Constantinopolitan (Bengel's 'Asiatic'), Western and Alexandrian, and that introduced the principle of genealogy in weighing their evidence. Naturally Wescott and Hort regard him with peculiar reverence, as the chief of their forerunners, though his New Testament text was inferior. It was not till 1831 that a truly critical text was published by the brilliant Lachmann (1793–1851), who reverted to Bentley's principle of the agreement of Greek and Latin texts as a test of antiquity (in a reading). Since then such attempts to restore the presumed primitive have multiplied. Samuel Prideaux Tregelles (1813–75), the distinguished Quaker scholar, following Lachmann's method, but with added material, issued his stately edition (1857–72), and the unwearied zeal of Constantin von Tischendorf (1815–74) gave forth as 8th edition (1869–72) two volumes of text with the most extensive critical commentary up to that time known. Both Tregelles and Tischendorf, smitten by paralysis, were unable to publish their Prolegomena, but the pious task was accomplished for the latter in 1894 by his successor, C. R. Gregory, aided by Ezra Abbot.

**"Neutrals."**— However, as early as 1853, B. F. Wescott (1825–1901) and F. J. A. Hort (1828–92), discontented with the state of the New Testament text, began the life-labor that culminated (1881) in their two-volume work, "The New Testament in the original Greek," a signal achievement of British scholarship, making a distinct advance beyond all predecessors. They exalt the genealogical principle of Griesbach, to whose three grand classes of manuscripts, called by them Syrian, Western, Alexandrian, they add an important fourth, the "Neutrals," represented especially by the Vatican and Sinaitic Uncials, B* and ℵ (the latter, discovered in Saint Catherine's Monastery, Mount Sinai, by Tischendorf — 43 leaves in 1843, now in Leipzig, and the rest in 1859, now in Petrograd — was published in 1862 at the cost of the Tsar). The manuscripts of the three grand classes they regarded as having undergone manifold corruption, from various sources according to various tendencies, from all of which the "Neutrals" (they think) have remained relatively free. With much confidence they made a brave "attempt to present exactly the original words of the New Testament," holding that "its books in extant documents assuredly speak to us in every important respect in language identical with that in which they spoke to those for whom they were originally written."

**Errors.**— That this confidence was ill-grounded may appear from three among many facts: They rejected the Pauline Codex F as an independent witness, declaring it was at least in its Greek text a copy of G (as also did Zimmer, in 1887, for much better reasons); but this judgment (in which they were followed by English and even by Continental critics generally) was entirely wrong, as Gregory explicitly declares: "Smith aus New Orleans weist nach, dass F nicht aus G sein kann, sondern dass F und G aus einer anderen kann, bekannten Handschrift abgeschrieben wurden" (*Am. Jour. Theology*, Bd. 7, 1903, S. 452–85, 662–88, 'Text Kritik d. Neuen Testaments,' iii, 1041). Again, they raise no doubt about the text of Rom. i, 7, regarding the agreement of all the chief manuscripts, versions and citations as decisive; but both Harnack and Zahn now admit the writer's earlier proof (1901) that the word "Rome" is interpolated in the elder text: "To all those that are in love of God." Neither had they any doubt about the text of Matt. xi, 27, yet both Harnack and Norden now recognize that the elder text was *epegno* (knew), and not *epignoskei* (knows), as all the manuscripts and editors give. It seems, then, that the text problem is far profounder than even Westcott and Hort conceived.

**Recensions.**— More recently (1902–13) a much more ambitious attempt at text-restoration has been carried out by H. von Soden, with collaborators, in the four-volumed 'Die Schriften des Neuen Testaments in ihrer ältesten erreichbaren Textgestalt,' with the employment of 165 manuscripts of the New Testament as a whole, 1,240 of the Gospels only, 244 of the Apostolos only, besides 250 Commentaries with texts, 170 on the Gospels, 40 on the Apostolos, 40 on the Apocalypse. The standpoint of von Soden in this colossal work is worth notice; in large measure it is that of Hug (1765–1846), the acute, if eccentric, Swiss Catholic, developed in his Introduction (1808), which Westcott and Hort, shrinking from the word "Recension," have been so careful to repudiate as "fanciful." Footing on two statements of Jerome, one already noted, the other in his "Preface to the Gospels": "I disregard those Codices fathered by Lucian and Hesychius, which the perverse contentiousness of a few upholds," Hug assumed a disorderly popular Western text (*koinē ekdosis*, vulgate edition), prevailing till the last half of the 3d century, when it underwent three independent revisions: by Hesychius (otherwise unknown, the *x* of

*Of 4th century, numbered 1209 Gr. in Vat., each page of three columns and 42 lines each, the whole Bible except Pastorals, Philemon, Revelation, Heb. $9^{14}$–$13^{20}$ (lost), written by three scribes, one the same as scribe D of ℵ (Tisch.), first catalogued in Vat. in 1481 (not in 1475), phototyped in 1889–90, 1905.—ℵ's page is thin, of four columns 48 lines each, of antelope (or ass) pelt, each of two leaves four pages: in all 346½ leaves, 13½ by 14 inches, Old Testament and New Testament (134 leaves) with Ep. of Barnabas and part of Shepherd of Hermas, collotyped (Oxford 1909), Tischendorf borrowed this treasure from the monks of Sinai, as the Israelites borrowed from the Egyptians: "I received from them, under the form of a loan, the Sinaitic Bible to carry to Saint Petersburg and thereto have it copied as accurately as possible!" In 1869 the Tsar presented the monks with decorations and $3,600 in cash!

text criticism) in Alexandria, by Lucian, the martyr of Antioch (312), and by Origen in Cæsarea. Similarly von Soden assumes that about the year 300 the increasing confusion of text-tradition "urged to the revision and authoritative edition of the text" at "three great Episcopal Sees," Alexandria, Cæsarea, Antioch, and accordingly he classifies his witnesses under the three text-forms, H, I, K (for *koinè*). Of these H (Hesychian), prevalent only in Egypt, is represented by the august 'Neutrals' B or δ 1 and ℵ or δ 2; also by the Codex Ephraem (C or 3), in Paris, a palimpsest deciphered by Tischendorf (1842), by δ 48, and (for Luke and John) by the recent find ε014 (in Detroit); it is likewise attested by about 40 papyrus fragments of the 4th, 5th and 6th centuries, by Egyptian translations and by quotations of Egyptian Fathers, as Athanasius, Cyril of Alexandria, Didymus. Such are the decisive authorities for a critic like Hort, such "The weight dark Egypt on his spirit laid."

**I and K.**— Next to H stands I, the text of Pamphilus (presbyter at Cæsarea, pupil of Pierius,— Origen's pupil,— teacher of Eusebius, scribe of Origen's works, a martyr in 301?),— a text not nearly so distinctly attested as H, but largely present in the quotations of Origen. Much further off, by itself, stands the K-text — of Lucian, whose "authority in wide circles," says Harnack, "about the year 300 displaced even that of Origen,"— issued from Antioch, a primitive focus of Christianity, and departing both widely and oft from H as well as I. The main well-spring of these deviations (in the Gospels) von Soden would find in the *Diatessaron* of Tatian; for Acts he refers them directly to Latin and Syriac translations, indirectly to a second edition of that work, which won great acceptance. For the Apostolos, Marcion's edition is suggested as the culprit. In general the attitude of Lucian seems to von Soden to have been freer than that of Origen, to which, indeed, it was consciously opposed.

**The Three.**— No manuscript has reached us antedating these recensions, some one of which is attested by every Codex. Throughout Christendom the three competed, H least of all, but I and K sharply for centuries, with mutual concessions that fell mainly to the good of K. Not one of the 36 I-witnesses to the Gospels, nor of the 14 to the Apostolos, approaches in singleness and purity of its text-attestation the oldest of the H-uncials, but at best only those of second rank, like C (δ3) or δ48. A chief Ms. for the Gospels is the famous Codex of Beza (D or δ 5) in Cambridge, for Acts E (or α 1001), and for Mark ε014. These manuscripts of the I-type, beginning perhaps in the 4th, multiplied in the 5th and following centuries, but more and more the K-readings intruded till they finally triumphed. In the Apostolos two main types may be distinguished. Both show close contact with Syrian versions, involving material text-variants, which von Soden would explain (as in case of Acts) by supposing, analogously, very early Eastern editions of the Epistles in which "the text was treated very freely" (mit sehr freier Textbehandlung). After the 10th century the mixed texts (of I and K) vanish, and K is left sole-reigning in the manuscripts.

For the Gospels the oldest K-text is that of Matthew in ε014 of the 5th or 6th century, next is ε051 (in Tiflis) of the 7th or 8th. But the oldest indirect witness to this text is the Common (*P'shitta*) Syriac translation made by Rabbula (?), bishop of Edessa 411–435, and representing the Greek text at Antioch.

**Not Final.**— This scheme of von Soden's is noteworthy in dismissing the "neutral text" and recognizing that the venerable twain, B and ℵ, are revisions like all the rest, as indeed is clearly shown by Adelbert Merx in the test-case of the two sons (Matt. xxi, 28–31). But it is far from true that the text-problem has been solved; von Soden's own conception of the earlier history of the text seems naïve, romantic and apologetic to a degree, and he is indeed contradicted by himself in immediately sequent sentences, thus: "As against the Gnostic redactions as well as Marcion's version of Paul's Epistles, the situation demanded that they lay emphasis now on the authentic verbal form of those Scriptures. Nevertheless, they were still so free in attitude toward this verbal form that Tatian between 160 and 170 could offer in his Diatessaron a compound of the four Gospels in one and obtain success for it in the widest circles." Plainly, then, the "demand," however just it may seem to von Soden, did not seem so to the Christians, neither was it by any means met. Moreover, it is to be noted that von Soden's explanation of the creeping-in of Tatian-variants and others is at most only probable, in no case certain. Even when it seems quite satisfactory it is not therefore necessary or proved: such indeed *may* (not *must*) have been the case. Now, when there are so many distinct and often independent cases, even though the probability in any one be very high, this does not make the probability high for the whole body of cases; it may still be very low, even though one may be unable to suggest any other solution nearly so likely in any individual case. We must beware, then, of ascribing great likelihood to such collective explanations as von Soden's. Often the results may have come about in totally different ways.

**Originals.**— In title the German's work is surely modest enough: "The Scriptures of the New Testament in their oldest attainable text-form," which is by no means necessarily the original form. Indeed, not only does any such original form seem almost if not quite as unattainable as in case of the Old Testament, but we may seriously question whether indeed there was ever any such, in the ordinary sense of the phrase. By original form of a modern work, as it first leaves the press, of an ancient one, as it was first written or dictated by the author himself, we indicate a more or less complete and rounded unit, subject only to minor modifications. In case of far-reaching changes, by addition, subtraction or otherwise, we should say, "This is practically a new work," and we should discriminate, as between the A and B editions of Kant's 'Critique of Pure Reason.' Moreover, we associate such an original with a certain author,— or if with collaborators, assigning, generally with fair exactness, responsibility to each. However, on coming to the New Testament, in particular the central mass, the Gospels, we find all such conditions reversed. Not to speak of leaving the press,

there is no notion of first writing or dictation of the Gospels as a rounded whole complete but for minor corrections. To be sure, some person or persons must have presided at each transformation of transformations, but they who shaped it, as it now is, most likely supplied but little material. It is indeed an accepted principle of Gospel study that the Synoptics, at least in their present form, are the result of century-long processes of continual growth, directed by continual pruning, of weaving, unweaving and weaving again. At the very opening we recognize that the first two chapters of Matthew and Luke, the so-called pre-histories, form no part of the originals, but are the prefix of a later hand. As we penetrate deeper and deeper into the intimate structure of the Gospel, the seeming unity resolves into multiplicity, the same chapter, paragraph, verse even showing layers of different ages and authors, of varying and even inconsistent tendencies. Inevitably the critic becomes anatomist and is forced to distinguish the components by finer and finer division. It is not any single output of any single mind nor of any co-operative group of minds that lies before him, but the gradual unfolding of a common consciousness, the stratified deposit of more than 100 (or even 200) years of the intensest religious life. The history of a Gospel is not unlike that of a saying or "winged word." On tracing it down we may find it now has many forms, perhaps in many tongues, that it goes back for generations perchance, and may be lost in the mists of antiquity.

**Illustration.**— As a special case, take the most famous of *Logia,* the one already mentioned (Matt. xi, 25–30), and hear the latest enlightened and enlightening judgment, that of Ed. Norden (elaborating earlier suggestions) in *Agnostos Theos* (1913, pp. 307–08). "The author of the source Q [the *Oracles,* commonly regarded as an oldest layer of Gospel tradition] was acquainted with a mystic-theosophic tract, which already had a long past behind it and which in any case had taken a fixed literary form in oriental languages (Greek included, which, however, is secondary). Not a few religious communities had made it their own; not only through literature but also by oral propaganda it had been spread abroad; meantime the ground-form had in each case been adapted to the special interests involved. Hence it followed of itself that it drew Christianity into its circles, as the latter was just entering into the rivalry of religions. The author of Q has accordingly taken out of it, over into his own book of doctrine and edification for the Christian community, *motifs,* preserving the exact connection of thought and words, a path along which the author of the Fourth Gospel has advanced consistently further. But to the old wine they have given an especial spice. The *Gnosis,* to propagating which — according to the conception of the next following generations — the Christian *Soter* [Saviour] was devoted, was of a kind wholly different from that in whose service both before and after him, the *Soters* of the other cult-communities had been engaged. In *their* theosophic systems the *wisdom* of this world was by no means banned; without knowledge no one could follow their complicated trains of thought. On the contrary, the struggle of the former against the learning of the scribes was still fresh in memory when the first sketches were begun. By combining individual traits drawn from the life-struggle of Jesus against the conceit of wisdom, with the traditional *motif* of the Jewish-Gnostic propaganda, the author of this *Logion,* like the author of the Fourth Gospel, gave the *Logion* a polemical point directed against such 'Gnostic' treatises. The Christian *Soter,* from whom the 'babes' ought to learn that he is meek and lowly of heart, directs his appeal to the weary and heavy-laden, to whom out of love and compassion he will give peace for the soul. Here a new sun flashes through the cold darkness of the pretentious Mages, theurges and 'prophets.' In the strict sense of the word, not even this new element was an *autophonia* [actual utterance of Jesus]: it is far too deeply interwoven with *motifs,* borrowed from literary tradition, for that. But that the Ideal is true in the higher sense, and as such is also imperishable, we know from Plato."

**A Gnostic Hymn.**— This literal translation makes no pretense to lighten the laboring speech of the illustrious linguist, nor does his view seem correct at one vital point; he throws out sops to Cerberus, nor hints that the "babes," as elsewhere in the New Testament, are Gentile converts to monotheism; but his general conception of the oracle as primarily a theosophic meditation of prechristian Gnostics, transformed in passing from community to community and laid at last in noble music on the lips of Jesus, is certainly correct and in full accord with the two-years earlier statements of *Ecce Deus* already cited. Now we may indeed inquire with von Soden after the "oldest attainable text-form" of these verses, but that will certainly not be "the original text," a notion that vanishes along with that of the original author.

**Verse.**— This glimpse at the studio of an Evangelist reveals also the momentous fact that these "Oracles" were not prose as everywhere read, but were verse, even as Norden prints this one, three stanzas of four lines each. If the numerous poems in the New Testament were all properly printed in verse, it would contribute more to the popular understanding of these writings than many commentaries. A good beginning has been made by Professor Briggs in his 'Wisdom of Jesus' and some striking examples are given in his 'Study of Holy Scripture'; as also by Dr. Moffatt in his 'New Translation' (1913).

**Latest Phase.**— Furthermore, with the disappearance of the mirage of "neutrality" in certain manuscripts, the centre of gravity of text-authority seems to have suffered displacement; it lies no longer in the testimony of the codices, but rather in the earliest translations and in the quotations by the Fathers. Of these there seem to be three types: Old Syriac, Old Latin, Clementine. Tatian's Diatessaron, Justin's quotations and others *may* attest the Greek text in Rome in the first half of the 2d century. For Buchanan's views see BIBLICAL ARCHÆOLOGY — NEW TESTAMENT.

**Bibliography.**— The literature of the Bible is immeasurable; 2,000 quarto volumes issued in Paris, in the second third of the last cen-

tury, from the press of Migne alone; fortunately, it is also in great part dispensable; it perishes by supersession, what is valuable in the work or possession of one century being constantly absorbed, assimilated and reproduced in the next. A few of the most noted books have already been named or even appraised in the foregoing text; a few others may now be added.

The writings of the Fathers are preserved in 476 quarto volumes in Migne's Patrologies and in the later more critical collections not yet complete. From time to time copious selections have been made under such names as 'Catena' (e.g., Cramer's, 1841), 'Spicilegium' (J. A. Grabius, 1700) and the like. Such a huge anthology is found in the 32-volumed Bible-work of Lemastire, hereafter mentioned under VERSIONS. Like the works of Augustine, those of his great continuator, in the Reformation, Jehan Calvin, especially the masterly 'Institutes of the Christian Religion' (Latin, 1536; greatly enlarged in French, 1540), stand conspicuous for all time. Less rigorous but very influential the 'Loci communes' (1521) of Melanchthon, scribe of the Reformation. On the Catholic side, surpassing even Bellarmine's, the works of Bossuet (1627–1704), as the 'Discours sur l'histoire universelle,' and especially the 'Histoire des variations, etc.' (1688), outshine all others. 'The Great Commentary' of the Flemish Jesuit, Cornelius à Lapide (van den Steen, 1567–1637), excels in extent (omitting only Psalms and Job) and thoroughness (reveling in the "fourfold sense"), and has been repeatedly edited and translated. Nathaniel Lardner's 'The Credibility of the Gospel History, etc.' (1727, 1733–55), a pioneer work of exhaustive patience and painstaking, was the *chef d'œuvre* of its day. J. J. Wetstein's 'Novum Testamentum Græcum' (1751–52) deserves renewed mention as a storehouse of classical parallels. Joseph Butler's famous 'Analogy' (1736) displayed extraordinary power of sustained thought, but the arch of argument from premises to conclusion was too long and fine spun. William Paley's more common-sense 'Natural Theology, or Evidences, etc.' (1802), as well as his earlier 'Horæ Paulinæ,' appealed powerfully to the Anglo-Saxon mind, but proved unequal to the increasing demands of thought and knowledge. About the same time (1818) T. H. Horne occupied the field with his long popular, but now superseded, 'Introduction to the Critical Study, etc.' Later works are generally less ambitious and comprehensive, content to occupy some limited sector in the long line of discussion, and in the main escape brief characterization.

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**BIBLE, History of Old Testament Interpretation. Jewish.**— Of all peoples the Jewish is the People of Exegesis. For over 1,000 years it poured out all its literary energy in the interpretation of its Bible. When Hebrew philology was born, the one scientific birth of Mediæval Judaism, it was at once diverted to swell the stream of biblical exposition; when the philosophy of religion was born, the tale was repeated, and even the mysticism of the Qabbala met a similar fate. All the rivers of the Hebrew mind have run into the sea of Hermeneutic.

The key-word of this devotion is *dārash*, "to seek," as in Ezra vii, 10, "to seek the Law of Yahveh"— whence *midrash* (inquiry), which for generations was only oral. As the national science, it was developed by the Pharisees in two main directions, *Miqrā'* (Holy Writ as *read*) and *Mishnah* (repetition, tradition, instruction). This latter branched into *Midrashoth* proper, expositions of Scriptures, and (as first shoot therefrom) the legal *Halakoth* (customs), statutes derived by exegesis from the Law, with others of oral tradition, to be traced back to the Law, and the moral *Haggadoth* (reports), expositions and illustrations connected not with the Law but with materials

derived from other scriptures. This deduction of the Halaka from the Law was also called *Talmud* (learning). The *Tosefta* (strictly *Tosefata,* increments) supplements the Mishnah. The earliest known commentary on any text is the Midrashim to four books of the Pentateuch: Mekilta (rule) on Exodus, Sifra on Leviticus, Sifre (Writings) on Numbers and Deuteronomy. The sages of the Mishnah and the Baraitha ("outside" tradition), called *Tannaim* ("teachers"), flourished from 10 to 220 A.D.

With advent of the *Amoraim* ("speakers," 219–500) came a change: The Mishnah itself was interpreted, and the whole body of this interpretation (in the second degree) was consolidated later and edited in the two Talmuds, Babylonian (Babli) and Palestinian (Yerushalmi) and alongside of them the Targum literature was extended to the whole Hebrew Bible. From Hillel (30 B.C.) on, the names of the expositors begin to appear. Hillel himself formulated seven Rules for halakic exegesis; his pupil Johanan ben Zakkai followed with a sort of symbolic exegesis, which flourished between the two destructions of Jerusalem (70 and 135 A.D. by Titus and Hadrian), a period of symbolism dominant in Christian ranks. Two opposing leaders were the liberal Ishmael ben Elisha,—who expanded the seven Rules to 13, a number afterward raised by Eliezer to 32 (for Haggadah), and laid down the doctrine of the human form of expression in the Bible,—and the rigorist Aqiba ben Joseph, who held every minutia of the sacred text to be significant, and successfully built up tradition as a hedge about the Law. This first period of Jewish exegesis ends with the final redaction of the Talmud (ca. 500).

Meantime among the *Minim* (sectaries) and even occasionally among the orthodox there had been considerable infiltration of foreign influence, which showed itself in curious speculations and esoteric doctrine (*Ma'aseh,* "work") about Creation (*B'reshith*) in Gen. i, and the chariot (*Merkabah*) in Ezek. i. Outside rabbinical ranks, Josephus wrote practically a Commentary on the Bible in his 'Archæology,' and Philo tried to show by thorough allegorizing that Greek philosophy had been anticipated by Moses. This exegesis by the Tannaim and Amoraim contained much acute and even just exposition — the depths of the Talmud are indeed thick-strewn with pearls, and would that well-equipped divers might bring more of them up! — but still more downright imposition of meaning on the text; as Ishmael b. Elisha finely said in rejecting an exegesis of Eliezer b. Hyrcanus: "In fact, you say to Scripture, Be silent while I expound" (Sifra on Lev. xiii, 49). The Babylonian Amoraim distinguished between *Peshat* (*out-stretched,* manifest, primary sense) and *Derash* (Midrash-exposition), declaring but not obeying the maxim that the latter could not annul the former; in the practice of the centuries following the final redaction of the Talmud, the Peshat vanished, only Derash was left, though the Masorah ("fetter") still hedged the Law after a fashion.

In the 8th century the Qaraites (Lecturists, "Sons of Scripture," Bene Miqra'), founded by Anan, disclaiming tradition, reacted from the Midrash back to the Bible itself (reminding one of Luther). The illustrious Saâdya* (892–942 A.D.), prince of all his order, in turn reacted still more powerfully against them and thereby stimulated them to worthier efforts, some of which made real advances. Benjamin Nahawendi revived Philonism; Chivi of Balkh (885 A.D.) avowed rationalism and gave 200 reasons, historical and legal, against the authenticity of the Pentateuch. For his perversity he is nicknamed Al-Kalbi (the Cynic) instead of Al-Balki (used only once). Aaron b. Elijah's 'Crown of the Law' (*Keter Torah*) in the 14th century was the swan-song of Qaraism in exegesis, though Isaac ben Abraham Troki (1533–94) produced in his 'Fortress of Faith' (*Chizzug Emunah*) — translated and published repeatedly in several languages, as late as 1873 in both German and Hebrew — a master-piece of polemic, which, according to the word of Voltaire, left the anti-Christian critic nothing new to discover.

Under Saâdya, Gaon† of Sura, the Peshat came once more to its own. Writing in Arabic, he not only founded Hebrew philology but strove hard to rationalize all his Bible and harmonize it with philosophy. In this interest his follower Abulwalid ibn Ganach did not shrink from transposing and interchanging letters extensively, holding that the authors put one word for another by mistake, a drastic method by which one of his disciples explained 200 passages. Moses ibn Giqatilla even dared to explain miracles rationalistically, inviting thereby the attacks of Ibn Balaam, and was the first to essay a continuous historic interpretation of the Psalms and Isaiah, dating the former from the Exile and the latter part of the latter from the Second Temple,—so winning the honor of frequent citation by Ibn Ezra. Such under Arabic contact was the golden age of Jewish thought in Spain, which held fast Saâdya's principle that Scripture did not transcend Reason even in the loftiest flights of religious experience. To make the twain agree called for high-handed freedom with the former, since the latter was inexorable, and philosophic Midrash began to threaten Peshat. Meantime in Christendom, particularly in northern France, the exegetes (*Darshanim*) were active, and R. Solomon ben Isaac (called Rashi, 1040–1105) wrote his great common-sense exposition of the Scripture, in particular, the Law, never yet surpassed in circulation and acceptance. But the ablest work of this French School was the Pentateuch Commentary of Samuel b. Mëir, who held firmly that interpretation must be unfettered by tradition. Lastly, Joseph Bekor Shor gave a foretaste of modern criticism in assuming a double narrative in the Pentateuch. So considerable was the accomplishment of common sense unguided by scientific philology or philosophic culture. Somewhat later (1140) the rover of learning, Abraham ibn Ezra (1092–1167), in the noon of his days "departed from his native place, in Spain, and went to Rome," spent 27 years of travel in France, Italy, England, and brought the highest scholarship then known to his Hebrew Commentary, notable for courage as well as caution, for compass even

*Variously spelled even by Saâdya himself. The form Saadia seems most common.

† Highness, Excellency, title (first conferred by Ali on Mar Isaac) of presidents of the Jewish academies at Sura and Pumbedita in Babylonia (609–1038).

more than for depth, in general conservative yet admitting minor accretions to the Pentateuch, to which a nebulous note on Deut. i would seem to ascribe post-Mosaic authorship, and hinting a later origin for Is. xl–lxvi. In traditional exposition he sees no exposition proper, but only "suggestion," "reminder," mnemonic device. The Kimchis, Joseph and his two sons, Moses and David, the latter the chief of all, agreed with Ezra but insisted more on grammar and rationalism, besides inveighing against Christian interpretation of the Psalms. Following but far surpassing all these, Moses Maimonides (Rabbenu Mosheb bar Maimon Haddayyan, of Cordova, 1135–1204), court-physician to Saladin of Egypt, mathematician, astronomer, Talmudist, the Aristotle of Jewry, and leader of all the expositor-choir, in his 'Mishneh Torah' digested and almost superseded the Talmud itself, and in his Arabic 'Guide of the Erring' (*Dalálatu 'l-Háirin*, or, in Hebrew, *Moreh Nebukim*) essayed the reconciliation of Moses and the Stagirite. Of course, such an attempt laid all the resources of metaphor, figures, esoterism, symbolism and the like under heavy contribution, but it abjured all mysticism, remaining rationalistic throughout. At miracles and prophecies it might seem to balk, but a theory of visions contrived to transfer much from the physical and objective without to the psychical and subjective within. Translated into Hebrew, it naturalized Aristotle in the Jewish mind and was propagated in a long succession of philosophic interpretations, some of which launched out boldly upon shoreless allegory.

Two beliefs now dominating, that there must be a deeper meaning in the Bible than the literal, and that all truth is hidden therein, gave rise (about 1268) to *mystic* exposition called *Secret Wisdom* (Chokmah Nistarah) or *Qabbala*, and at the same time to the *Gematria** of Eleazer ben Judah at Worms, on which the Qabbala itself is based. Bachya ben Asher commenting on the Law (1298) recognizes four Ways to Truth: Peshat, Midrash, Reason, Qabbala ("path of light"). More portentous was the simultaneous introduction into Spain by Moses de Léon of *Zohar* (Light), a commentary on the Pentateuch, with many digressions and additions, professing a hoary antiquity for its mysticism as having been taught by the sages of old, even by Aqiba's pupil, the wonder-working Simeon ben Yochai. It also taught four Senses of Scripture: Peshat, Remez (allusion), Darash and Sodh (secret, mystical), —which indeed it had borrowed from such Christians as the Venerable Bede (673–735), who thought the inner sense surpassed the letter as apples do leaves (cp. Jerome, Ep. ad Gal. i, 2), and Hrabanus Maurus (776–856), Preceptor Germaniæ. Hence the consonantal acrostic PaRDeS (Paradise), known since Aqiba, came into vogue as the tenet of the fourfold sense,† which had already marked hermeneutic with long and broad eclipse. Herewith the night of one and a half centuries settled down on Jewish Biblical Exegesis, till the morning star of Mendelssohn arose. One lamp indeed was still lit in the dark, the learned and unwearied grammarian and lexicographer, Elijah Levita (1468–1549), whose 'Masoret Ha-Masoret' (Venice 1538) demonstrated the human and post-talmudic birth of vowel-points, to the indignant dismay of the orthodox, both Jew and Gentile, who had accounted them primitive and divine. Meanwhile the hunt for many meanings went bravely on, and in Poland with especial vigor and success: in 1630 Nathan Spira discovered 250 senses for Deut. iii, 24ff, only alas! to be outvied by Elijah b. Abraham Oettingen, who brought 365 to light.

Moses Mendelssohn (1729–86), the "Nathan" of Lessing, victor in competition with Kant (1763), by his Commentary on Ecclesiastes (1773) and still more by his translation of the Pentateuch (1783) recalled the Rabbis to reason. His co-workers, called *Bi'urists* (from *Bi'ur*, exposition), translated and commented (in German, at first in Hebrew letters, later in German). Similarly each nation now received its own translation, Luzzatto's Italian and Cahen's French being especially valuable. Nevertheless, in the marvelous advance of the last century toward the comprehension of their Scriptures, the Jews have rarely been conspicuous in front. Though abounding in ability and learning, they have suffered from lack of organization in universities and academies; their attention has been in large measure absorbed in the study of post-biblical Judaism, a terrain immense and dear as fatherland to their hearts, wherein only they are at home; and the rapidly increasing complexity of modern life has burdened the Rabbinate with social activities and countless extra-scholastic cares. But when all is said it remains true perhaps that the Jewish scholar has put off his sandals, as treading on holy ground,—"he feared the gods and heroes and spake low,"—he has not quite found as yet a *modus vivendi* with the dissolvent criticism of the last 60 years, he awaits another turn of the wheel. Witness the recent severe strictures of David Hoffmann in 'Die wichtigsten Instanzen gegen die Graf-Wellhausensche Hypothese' (1904) and his uncompromising statement of the (orthodox) Jewish position on the whole Bible-question, in his 'Leviticus' (1905–06): "As we are firmly convinced of the divinity of the Halakoth, the words of the Tradition count for us exactly as much as the words of the Scripture" (p. 2); "Our first principle is: we believe that the whole Bible is true, holy, and of divine origin,—*every word* of the Torah was written down at the command of God" (p. 6); "The second principle, which must guide every Jewish expounder of the Bible, is the assumption of the integrity of the Masoretic or traditional text" (p. 7).

Hoffmann's contradiction, dealing mainly with matters of the Law, would evade the critics by supposing frequent changes and adaptations of the Torah during the wanderings of the 40 years (it were better 40

* Letter-art, interpretation by numbers, words of the same numerical value being treated as equivalent. It is found in the Talmud and was employed probably much earlier.

† Beautifully allegorized in Zohar (ii,99): Doctrine shows herself to her beloved, her chosen, at first beckoning with her hand (in Remez) then lisping a few words through a thick veil (in Darash), then speaking through a thin veil (in Haggada), at last conversing face to face and heart to heart (in Sodh).

squared).* while on the other hand Siegmund Zampel has treated the historic features in detailed articles but has developed no systematic anti-critical view. Both are constrained to many unpalatable concessions, and Barth renounced the pretension of Is. xl–lxvi to proceed from the son of Amoz. More liberal Rabbis, as Graetz, Hirsch, Jacob, have sought peace with the Higher Criticism, while blunting its edge at various points, and the Breslau editor, Rabbi A. Geiger (1810–74), has clearly shown in his 'Urschrift und Uebersetzungen der Bibel' (1857), that the growing, expanding, self-transforming religious consciousness of Israel is mirrored in the like-changing text of the Bible, and that the Masoretic as well as the elder forms have shared in this steady evolution. The effect of prolonged study is also strikingly shown in the extremely erudite and even encyclopædic commentaries of Marcus M. Kalisch (1828–85) the refugee of 1848, of which 'Exodus' (1855) is conservative, 'Genesis' (1858) liberal, 'Leviticus' (1867, 1872) radical, forestalling Wellhausen at many capital points.

Most of all, Professor David Neumark in his (German) 'History of Jewish Philosophy' has brought this discipline to the aid of Judaism, seeking to supplement and correct the Higher Criticism into accord with a deeper and broader view of the genesis of the Idea of God under the influence of Prophetism. Plainly, then, the counter currents are as strong in Judaism as elsewhere, and there is no reason to fear that Jewish exegesis will not yet catch up and keep pace with Gentile, remembering that the vehicle of revelation is not any lifeless form of human speech but the everliving spirit of the People itself.

**Gentilic.**— Since the Christian movement took its rise among the Jews of the Dispersion, in Galilee of the Gentiles (Matt. iv, 12–16), the attitude of the early disciples toward the Hebrew Scriptures can hardly have differed sensibly from that of the Jews, among whom Hellenistic vied with Rabbinical methods. Very soon, if not indeed at the start, allegoric interpretation acquired vogue and prevailed. "Which things are an allegory," Gal. iv, 24. The Scriptures were regarded as so many sign-posts all pointing toward the "consummation of ages," and all previous history was viewed as reflected in the present. "These things were our examples," "that Rock was Christ" (1 Cor. x, 6, 4); "whatever was forewritten was written for our learning" (Rom. xv, 4), etc. From such premises the Scriptures were speedily interpreted throughout as *prophecies in types*, and out of them elaborate lives of Jesus were constructed, as in the epistles of Barnabas and Ignatius, in the writings of Justin and of still earlier and later Christians generally. From such interpretation the step was easy and natural to invention: if the event was not known to have occurred, our knowledge was defective. Clemens Alexandrinus in his 'Stromata' (VI, 673, Sylb.) defines the fourfold engrafting of the sacred word, the last or gnostic form being able (like Sodh) to look through things themselves. Origen, adopting 13 of Philo's 23 rules and distinguishing three senses of Scripture, corresponding to Body, Soul and Spirit, carried allegoric interpretation to almost inaccessible heights. Under this or that form the typical or allegorical method (reappearing as an after-image in Hengstenberg) prevailed for centuries, though here and there discountenanced by sober judgment represented mainly by the Antiochan School founded by Lucian (300) and for centuries the vigorous mother or grandmother of the most approved patristic exposition, which still however insisted on two senses corresponding to the Covenants, Old and New. Jerome appears to have been saner, but inconsistent, unwilling to tie himself even to the allegoric method, which reigned throughout the Middle Ages, the fourfold sense being formulated in the couplet: "Literal sense (littera) teaches facts; allegorical, what to believe; moral, what to do; anagogic (mystic), whither we tend." * No steps were taken by the Church toward even proposing the problem of biblical criticism, of whose existence indeed men were quite unconscious. The faith of Augustine was in truth wounded by the phrase "unto this day" in Josh. iv, 9, but was healed by the same phrase in Josh. vi, 25. We have noted many such qualms in reviewing Jewish interpretation, but the first scientific criticism we owe to the Neo-platonic Porphyry, who showed, against tradition, that 'Daniel' originated not in the Jewish Captivity but 400 years later under Antiochus Epiphanes. For the untroubled conscience of the Middle Ages, the Holy Scriptures served only the purposes of edification and controversy,— the thought of making them the subject of scientific study does not seem to have arisen. At length came stirrings of the dawn. From authority and allegory Wyclif and Hus reacted toward the letter, but it was the Jewish convert Nicolaus de Lyra (1270–1340) who by soberer methods and knowledge of Hebrew displayed in his 'Postilla Perpetua' (*litteralis* in 1322–31, *mystica* in 1339) made smoother the way for Luther. "If Lyra had not piped, Luther had not danced" (si Lyra non lyrasset, Lutherus non saltasset). By the Council of Trent, however, Exegesis was formally immured within four walls: Rule of Faith, Mind of Church, Consent of Fathers, Decrees of Councils.

With the Reformation, Holy Writ sprang up into a seat of supreme authority. Said Chillingworth, "The Bible, and the Bible alone, is the religion of Protestants"; it became the Court of Cassation, of final appeal. Under Luther, Melancthon, Zwingli, Calvin, the mind of the Reformers maintained in some measure its attitude of new-won freedom; but with the 17th century the Dark Ages of Confessionalism closed down upon Europe, for 150 years, during which practically no advance was made toward understanding the Scriptures. However great the talents of the learned, they all lay wrapped up in the napkin of implicit faith (Hobbes). A rude shock to this slumber in the all-sufficiency and verbal infallibility of the

* Aqiba held that the whole ritual was given thrice, first on Sinai, then in the tent of meeting, finally in the plain of Moab; so Hoffmann assumes four sets of Laws: Pre-Sinaitic, Sinaitic, tent-of-meeting, and Arboth-Moab; of these the content is "eternally invariable," but the form is subject to change with time and circumstance. ('Leviticus', i, p. 22.)

* Littera gesta docet, quid credas allegoria,
Moralis quid agas, quo tendas anagogia.

Scriptures, as known to clergy and people, was given by the demonstration (already noted) of Elijah Levita, which was indeed violently resisted by the Buxtorfs (1564–1664) and others, but was confirmed (1650) by Louis Cappel (1585–1658)* and at length sullenly admitted. Nevertheless, no awakening followed. The mind of the Reformed Church turned over again to a sleep continually troubled by dreams of contending dogmas. It was one of the virilest and widest-armed, if least attractive, of English thinkers, Thomas Hobbes (1588–1679), who in his well-named 'Leviathan' (1651), with the unclouded eye of common-sense, armed with no lens of exact philology, first saw and proclaimed the general conception of Hebrew Scriptures that has now long since become the common property of culture. From obvious considerations he shows (c. 33, pp. 200–203) "that the five books of Moses were written after his time, though how long after it be not so manifest," while allowing his authorship of the "volume of the Law" "found again by Hilkiah, and sent to King Josias (2 Kings xvii, 8)." The ill-famed "unto this day" and similar phrases refer Joshua, Judges, Ruth, Samuel to times "long after" those persons, even "to the day of the captivity of the land" (Ju. xviii, 30). Similarly Kings and Chronicles, as also Ezra and Nehemiah, are shown to have been written "after the captivity" and Esther during the captivity "or after it." As to the rest, he departs in general much less from tradition, though regarding Job not as history but as philosophy and poetry "in Hexameter verses," with Prologue and Epilogue in prose. The Psalms seemed to him mainly Davidic, though edited after the Captivity, Proverbs the compilation of a "godly man, that lived after them all" (the authors); Ecclesiastes and Canticles are "Solomon's." Strangely, Sophoniah is "among the Prophets the most ancient," and "if the . . . Apocrypha . . . be credited, the Scripture was set forth in the form we have it in, by Esdras." In the preceding chapter Hobbes speaks from the summits of intelligence and freedom (pp. 196–197), only to sink at once into the depths of servility (198–199), but his example is extremely instructive as showing what triumphs are possible to the open mind. The Englishman did not excel in keenness many others, both Jew and Gentile, who far surpassed him in technical mastery of the subject in hand; and yet he saw clearly what had been hidden from rabbinical pilpul and clerical scrutiny for nearly 2,000 years.

Hobbes was soon followed by a far greater thinker far better equipped. In 1670, while the 'Leviathan,' formerly sold for eight shillings, having been condemned in 1666 by Parliament, was selling at 30 shillings, "it being a book the bishops will not let be printed again" (Pepys' 'Diary,' 3 Sept. 1668), Baruch de Spinoza (1632–77) published anonymously his noble plea for "freedom of thought and speech" (libertatem philosophandi), 'Tractatus theologico-politicus,' the groundwork of modern criticism, wherein having set forth in chapter VI a purely rationalistic doctrine of miracles, and in chapter VII a common-sense method of interpreting Scripture from Scripture alone, he proceeds in chapter VIII to lay the foundations of historical criticism of the Old Testament by discussing in detail the authorship of the Pentateuch and the other historical books of the Old Testament beginning with the mystic note of "Aben Ezra" on Deuteronomy, which he expounds, and concluding that "it is clearer than the sun at noon that the Pentateuch was written not by Moses but by some one living long after Moses," to whom indeed he attributes other writing, but not the Pentateuch. From various considerations, as of the phrase "unto this day," he deduces that the book of Joshua "was written many generations after his death," and Judges "after the establishment of the monarchy," and Samuel "many generations after Samuel's death," and Kings compiled, he does not say when — but "all the books we have hitherto considered are compilations," — he might have still said mosaic, no other term is so fitting. But the compiler, he thinks, "was a single historian," most probably Ezra, and if we had the originals, "we should find a great difference in the words of the precepts," their "order," and the "reasons" assigned. He thinks "that all the materials were promiscuously collected and heaped together to be more readily examined and arranged thereafter." The work was never completed by Ezra, for unknown "cause, if it were not untimely death," whence the duplication and confusion still reigning. He also discusses the marginal readings and the vowel-pointing, which he thinks is always human and sometimes wrong, as in Gen. xlvii, 31, where he would read *mate* (staff) — as does the Septuagint and Heb. xi, 21 — instead of *mita* (bed), a criticism with which commentators do not in general agree. The text, he thinks, has felt the tooth of time, has suffered various corruption, as witness the 28 cases of hiatus, and the rabbinical readings in the Talmud, often different from the Masoretic; also it was singularly exposed to corruption from the painful resemblance between pairs of Hebrew letters, as Beth and Kaph, Daleth and Resh, Vav and Yod, and he might have added Gimel and Nun, He and Cheth, and even Tav. While there is much in these chapters (VIII–X), that would call for revision or reversal, and while the doctrine of the "simplicity of the Scripture" and its "purely moral precepts" is superficial, it remains nevertheless that the philosopher anticipated the method and spirit and many of the results of modern research and blazed a path through a hitherto impenetrable forest.

However, he won no followers for nearly a century, such was the obloquy that clouded his name. In 1682, Father Richard Simon, of the Oratory of Paris, in his 'Histoire critique du Vieux Testament,' argued against the single authorship of the Pentateuch on literary grounds, since the style varies where no variety of matter requires it, but the positions of Hobbes and Spinoza were not attained. A further step in pure literary appreciation was taken (1753) by Robert Lowth (1710–87) as professor of poetry at Oxford in his 'Academic Lectures on the Sacred Poetry of the Hebrews,' and his translation of Isaiah (1778), in the announcement and application of parallelism in Hebrew verse, a peculiarity apparently derived from Babylon (Schrader), already known im-

* For 10 years his manuscript sought a publisher; Buxtorf tried vainly at first to dissuade and then to refute.

perfectly to Schoettgen and even to Rabbi Azarias. In the same year (1753) a much more important advance was made — again on purely literary lines and again by a layman, the Catholic Jean Astruc, in his celebrated 'Conjectures sur les mémoires originaux dont il paroit que Moÿse s'est servi pour composer le livre de la Genèse,' wherein he announced that Moses in Genesis and Exodus i, ii made use of two large documents, A and B (besides 10 small ones), distinguished by use of the divine name: Elohim in A and Yahveh in B. The path thus opened was diligently followed for 155 years; not until 1908 did Eerdmans diverge from it boldly. But though Astruc (1684–1766) rendered a notable service in supplying criticism with its first purely literary criterion of authorship, he himself lingered far behind the standpoint of Spinoza (whose "vain triumph" he would "annihilate") or even of Hobbes, his object being a pious one, to remove obstacles in the way of accepting Mosaic authorship, and his book a strange mixture of naïveté and acuteness. He builded better than he knew; and it may be well to remark that as the first ancient Old Testament critic, Porphyry, was a metaphysician, so were the first moderns, Hobbes and Spinoza, while Astruc was physician to Louis XIV, and all were dilettanti. It is also interesting to note, and significant, that many of the boldest discoveries were not the intuitions of youth nor even the conquests of middle life, but the ripe fruitage of time, the hard-won trophies of declining years. But even Astruc's cry was long unheard in the wilderness. At length under the stimulation of Herder (1744–1803), the philosophic literateur, in 1780–83 Eichhorn (1752–1827) brought forth his 'Einleitung,' the first comprehensive treatment of the Old Testament as literature.* He adopts and extends Astruc's analysis of Genesis into Elohistic and Yahvistic portions, and distinguishes between the people's Code (Deut.) and the preceding priestly legislation; moreover, while still clinging to Mosaic authorship he recognizes many fragmentary documents embedded in the Five Books, whence the name *Documentary Hypothesis*; he detects in Isaiah, as had Koppe in his translation of Lowth, much that is non-Isaianic, in Daniel no little that is post-exilic; and he displaces the Song from the age of Solomon and the Preacher into the Persian period (538–332 B.C.) — results that have won him the title "Founder of Modern Old Testament Criticism." Twenty years later they were restated in a modified form as the *Fragment-Hypothesis*† by the unfrocked Catholic Scot Alexander Geddes (1737–1802), by whom "almost solely" (fere unicus) Eichhorn was willing to be judged, in his 'Critical Remarks on the Hebrew Bible' (1800). But on the island the season of figs was not yet. The next forward move was made in 1798 by another layman, K. D. Ilgen (1763–1834), in his splendid *torso*, 'Documentary Archives of the Jerusalem Temple in their original Form' (1798), by discerning two Elohistic sources where Astruc and Eichhorn had seen only one. But thus far criticism had remained merely literary, starting no question of the evidential worth of the documents or sources, a question first brought to the front (1806–14) in the 'Contributions to Old Testament Introduction,' the first and best work of the many-sided de Wette (1780–1849), the pioneer of historical criticism, also inspired by Herder in the golden days of Weimar. Turning first to Chronicles, he exhibited its fictive and tendential character, thus clearing away a thick cloud from the history and religion of Israel; next he brought Deuteronomy down to the 7th century, where Parvish in his 'Inquiry into Jewish and Christian Revelations' had first placed it (1739), and proved that the history from Judges to Kings contradicted the dogma of Mosaic origin of Pentateuchal legislation,— all permanent achievements of criticism.

Though a poet, de Wette gave no rein to historic imagination, and indeed all work thus far had been almost entirely negative. In striking contrast was the personality and with it the work of Heinrich Georg Augustus von Ewald (1803–75), protegé of Eichhorn, "founder of a new science of the Hebrew language," critic, controvertist, patriot,— expelled, exiled, tried, acquitted, condemned, imprisoned,— but above all the constructive historian with the gift of tongues, the Niebuhr of Israel as it was in the mind of the first half of the 19th century. His central work, 'History of the People Israel' (1843–59; Eng. tr. 1867–74), the product of boundless learning and 30 years of untiring investigation, is a glorification of Israel as the inspired people of God, whose history is the history of the Revelation of Religion to the Race, in a Trinity of Stages, as Hebrews, Israelites, Jews, through three half-milleniums, from the Exodus to the final complete and perfect self-manifestation of God in Christ. On such a huge canvas this passionate artist-scholar, this "backward-gazing prophet," has painted the life of the chosen people. Although still deeper study and exacter thought have cast aside the picture as false in color and faulty in drawing, its place is secured among the creations of genius by the immensity of knowledge displayed and the technical skill, by the infinite fineness and minuteness of delineation, the richness and vividness of tone, the dramatic skill and boldness of the composition, and by the unwavering faith, the devoted and unflagging enthusiasm that the author has brought to his task. Ewald did not in truth lift or roll away the clouds that hung dark over the history and literature of the People Israel, but he lit them up with the splendor of his learning and imagination into a luminous haze, where we behold "vast forms that move fantastically" to the charm of his dogmas and preconceptions.

So great was the authority of this Göttingen oracle that for a full generation a conception widely different from his called vainly for recognition. Ewald had made classic the notion, held by Dillmann with some modifications till his death (1894), that the priestly legislation (called by him 'Book of Origins' and now denoted by P) was the oldest stratum of the Pentateuch, was *Grundschrift* (Tuch) or basis of the whole, on which the prophetic parts (J E) and Deuteronomy were later deposits. But as early as 1832

* In the preface to the second edition (1787) he appropriates the term "Higher Criticism," already familiar in humanistic studies and brilliantly illustrated by Richard Bentley (1662–1742) in his 'Dissertation upon the Epistles of Phalaris' (1699).

† It is noteworthy how Document-hypotheses tend to dissolve into Fragment-hypotheses, a tendency vigorously resisted by Smend in his 'Erzählung des Hexateuch' (1912).

Eduard G. E. Reuss (1804–91), as privat-docent in the Strassburg Theological School, had perceived and maintained in lectures, though he dared not publish, that the order was the reverse, that P came last in time. It was Vatke (1806–82), however, who first gave such views to print (1835) in his 'Religion of the Old Testament,' but without effect on critical opinion, having relied, as Hegel's pupil, on *a priori* principles, on a just perception of what would be the natural order in the development of Israel's religion and ritual, rather than on any actual determination and interpretation of literary or historical facts. Ewald's towering construction received its first concussion (1866) from the 'Historical Books of the Old Testament,' by Reuss' pupil, K. H. Graf (1815–69), but the decisive blow was delivered by the Dutch master, a "prince of critics," Abraham Kuenen (1829–91), who, starting but quickly departing from Ewald's standpoint, developed and demonstrated the Reuss-Graf theory in his celebrated 'Godsdienst van Israel' (1869–70), a lasting model of clear, judicial, convincing examination, followed by a series of supplementary proofs in the leading Dutch journal, *Theologisch Tijdschrift*, as well as by his comprehensive and exhaustive 'Onderzoek' (Inquiry), etc. Hereby to the unbiased mind the matter seemed decided, but it was Julius Wellhausen (1844–1918) who with astonishing mastery of detail and with sovran power in historical combination overcame the most determined opposition and compelled the assent of the most reluctant converts, though of the two props of the earlier construction, Delitzsch and Dillmann, the latter remained unconvinced till death. Wellhausen's incisive memoirs were followed 1878) by his 'Prolegomena zur Geschichte Israels,' reprinted (1883) as first volume of 'History of Israel' (tr. 1885), and (1894) by 'Israelitische und Jüdische Geschichte'. Hereby was established the school that in spite of Harold M. Wiener still dominates Old Testament criticism.*

Meanwhile there had been crying in England the voice of Kuenen's "valued friend," Jn. Wm. Colenso (1814–83), bishop of Natal, through his 'Pentateuch and the Book of Joshua critically examined' (1862, 1871, 1879), wherein he showed forth the fictive nature of the story in P and the many contradictions of the Hexateuch, having been impelled to critical inquiries, while translating Genesis, by the puzzling question of his Zulu converts: "Is all that true?"† His fellow-bishops answered by deposition in Africa and excommunication in England, allowing him however the unique distinction of learning and ability employed otherwise than as a humble though useful drag-sail. Hardly was the discordant cry of Colenso happily silenced, when it was caught up in re-echo much louder from Holland; for as he had stimulated Kuenen, so had Kuenen stimulated W. R. Smith (1846–1894), from 1881 editor of the 'Encyclopædia Britannica' (9th ed:), who began (1875) to publish a long series of epoch-marking articles from the pens of himself and others, in particular Cheyne (1841–1915) and Wellhausen, arousing lively interest and acrid controversy. Denounced (1876) as the "echo of a dreary voice from Holland," in 1878 he was tried, and condemned by vote of want of confidence. Hereby his opponents won a Cadmeian victory, for his reasonings survived such refutation, and thrown into Lectures, which were published as 'The Old Testament in the Jewish Church' (1881), 'The Prophets of Israel' (1882), and 'The Religion of the Semites' (1889), they swayed powerfully not only the lay but even the clerical mind of English-speaking peoples. At length in 1891 Dr. S. R. Driver (1846–1914), Regius Professor of Hebrew and successor of Pusey as Canon of Christ Church, Oxford, in his 'Introduction to the Literature of the Old Testament,' though he had formerly criticized Wellhausen harshly, was able to lend, without any official danger, not only the sanction of sober and cautious scholarship (at many other points still timid and compromising) but also the dignity of high position to the heresy that cost Professor Smith his chair; since when, the Reuss-Graf-Kuenen-Wellhausen view may be said to be naturalized in Britain.*

Meantime no less a sea-change has come over the criticism of Prophets and Writings. As a cumulative result of the learned labors of a host of scholars, conspicuous among them Cheyne, Duhm, Kuenen, Marti, Oort, Stade, Welhausen, it came to light that perhaps not one of the prophetic utterances had reached us in exactly its original form, but all had undergone, if not before, at least after the exile, a more or less thoroughgoing or even repeated revision that involved every form of modification, compilation, elision, insertion to an indefinable extent. In fact, it became not so much a question of detaching post-exilic deposits as of certifying here and there the presence of a pre-exilic fossil. Herewith the centre of literary gravity began anew its descent toward the Persian period and even beyond, toward the heroic era of the Maccabees. To appreciate the extent of this disintegration under critical analysis, it suffices to consider Cheyne's 'Composition of Isaiah' or the latest edition of Duhm's 'Commentary' (1914), which reveal the growth of this prophet as reaching through six centuries, from the 8th B.C. far into the 2d B.C. Similarly the book of Jeremiah crumbles under analysis, as in the monograph of Mowinkel, already cited. It has long been known that the Psalms are of dates the most distant apart, and it is now recognized in such a very conservative work as Kittel's 'Die

*Smend's "masterpiece," comparatively conservative, 'Die Erzählung des Hexateuch' (1912), distinguishes three parallel Judaic sources: $J_1$ (850–800 B.C.), $J_2$ (great poet, greatest Old Testament historian, 800–750), E (prophetic-Israelitic, after 700); combined in two redactions: $R_1$ ($J_1$ + $J_2$), $R_2$ ($J_1$, $J_2$ + E); with later Interpolations, as of the 'Book of the Covenant': all the work of Yahvists, of *Mosids* opposed to *Aaronids* of Jerusalem. Next is Deuteronomy, two editions: $D_1$ with the Introduction ($1^{1}$–$4^{44}$) by an author before downfall of Judah; $D_2$ with the Introduction ($4^{44}$–$11^{25}$) post-exilic. Lastly, P (Priestly Code and History), in which are many extensive secondary elements. Redactors are always at hand. Apart, by itself, stands the Law of Holiness (Lev. xvii—xxvi).

† The words of the noble Bishop deserve commemoration: "My heart answered in the words of the Prophet, Shall a man speak lies in the name of the Lord? I dared not do so." The converts had converted their converter.

* To measure this movement in the Church of England compare Driver's chapter on Daniel (485–515) with Pusey's 'The Prophet Daniel' (1864, 1885) written to refute 'Essays and Reviews' (1860), the work of seven authors, the scandal of its day, but long since overbidden. Driver repudiates all of Pusey's contentions, as does even the Catholic now. Prof. Temple wrote the first of the 'E. and R.' but quietly withdrew it (1870), as harmless but in bad company, on elevation to the bishopric of Exeter.

Psalmen' (1914) that they are mainly post-exilic (consult the brilliant book of Cheyne on the 'Origin and Contents of the Psalter,' 1890). Without insisting on other examples, it may be said (as even Sayce has repeatedly avowed) that compilation is surely the open sesame to the correct understanding of the Old Testament. Questions of authorship have long since lost much of their pertinence and meaning. The authors' names have become signs for certain highly complex phases of the one great Spirit of Israel, which wrote and rewrote, which revised and re-revised, the wonderful scrolls of Scripture. In last analysis, this indeed is the only true conception of any literature; it is the visible sign of some shining phase in the life of Spirit; but in the literature of Israel we are brought to face most fully and unmistakably this momentous fact.

The sifting process, under which the centre of Israel's Bible settles down ever deeper into the Perso-Hellenic period, is it now complete? By no means. Of course, it cannot go on indefinitely; sooner or later the final position must be practically attained; but there is still room for notable depression, which has even been attempted of recent years with remarkable energy. It was Ernest Havet (1813–89) who suggested in his comprehensive work 'Le Christianisme et ses origines' that "the supposed antiquity of the prophets placed in the 8th, 7th and 6th centuries is a pure illusion, even as that of the Psalms" (III, 180–213, 1884). The inspiration of these prophets he finds not in the fall of Samaria and Jerusalem under Assyrians and Chaldeans, but in the glorious struggles of Jews against Syrian kings in the 2d century. The reproach was made by Scherer (1879) that Havet, though certainly acute as a critic, had no right to speak in the matter, being disqualified by his ignorance of Hebrew and German, and his arguments, admittedly ingenious, had little effect. More recently his theses have been revived by distinguished scholars of France, such as Joseph Halévy ('Récherches bibliques,' 3 vols., 1895, 1901, 1905), Maurice Vernes ('Résultats de l'exégèse biblique,' 1890, 'Essais bibliques,' and 'Du prétendu polythéisme des Hébreux' 1891), and especially by Edouard Dujardin ('La Source du Fleuve Chrétien,' 1906; revised and translated 1911), who restores the order of the Hebrew books, not in the spirit of 'anticritics' (as Sayce and Orr), by placing the Law before the Prophets, but by placing the Prophets after the Law; this with Joshua, Judges, Samuel, Kings he refers to the 4th and the beginning of the 3d century (adding Chronicles and Ezra—Nehemiah somewhat later), but Jeremiah, Ezekiel, Isaiah and the Twelve to the second half of the 4th and all of the 3d century, and lastly Psalms, Daniel and the other Hagiographs to the 2d century and the 1st (B.C.),—in all, three grand divisions as of old, in the old time-order, Law, Prophets, Apocalypses. Undoubtedly this scheme, set forth by Dujardin with such impressive eloquence and such vivid historic imagination, has somewhat to say for itself, and it yields a cleaner-cut answer to *some* questions than any other yet proposed.* For instance, it is not easy to think of Amos, the shepherd of Tekoa, as really author of the prophecies that bear his name but attest considerable culture and literary art. Guthe is constrained to invoke the aid of "various redactors" "whose work was completed in Jerusalem, where in the 3d century B.C. the writings of the elder prophets were collected for the Jewish religious community." These "various redactors" not only "arranged" prophecies but made various "smaller additions," such as the denunciations against Tyre, Edom, Judah, the second half of Chap. 9, and so on. For how much these "various redactors" are responsible, it is hard to say. Guthe's claim for Amos is modest enough: "Without doubt the book is based on *notes* (Aufzeichnungen) of the utterances of Amos, which he made himself or had others make for him" (Kautzsch, D. H. S., ii, p. 27). "Without doubt" this "eldest of the prophets" (760 B.C.) seems hereby virtually surrendered to the "3d century in Jerusalem." Similarly Haupt refers Zachariah i–vii to the beginning of the reign of Darius Hystaspis (521–486), the others (ix–xiv) to the Maccabean period, though Driver finds the style of cc. xii–xiv "singularly pure," "the diction resembles that of Amos" (473, 505). But there appears no reason why these "various redactors" may not in any case have taken very considerable traditional material, whether oral or written, of very ancient origin, whether lyric, historic or gnomic, and worked it up into forms better suited to the needs of the community, their own ideas and the historical conditions under which they lived.* In so doing they may either have preserved the ancient names and reference, or have taken over the ancient names, as Edom, Egypt, Babylon, etc., and applied them to the new political factors, as Rome, Greece, Syria, etc. That this latter was a habit is proved by Cohen in 'Les Pharisiens,' i, 362, ii, 282. The strife between French and German criticism is far from ended, but in one aspect at least it is largely a question of degree, of the extent of admitted 3d-century redaction.

In still another direction the prevailing Wellhausen criticism, brilliantly culminating in Gunkel's Genesis (1902, 2d ed.), has of late met strong opposition. After 155 years of recognition the Astruc criterion was formally rejected by B. D. Eerdmans in his 'Alttestamentliche Studien' (1908–12). The basis of rejection is largely laid in a deeper study of the Septuagint, which certainly shows considerable irregularity where order had been held to reign. Thus even in the famous first chapters of Genesis, where the separation into Elohistic and Yahvistic documents appeared almost to lie on the hand, the whole matter seems thrown into doubt by the Septuagint and other witnesses. The distinguished Semitist of Cornell, Nathaniel Schmidt, in a remarkable paper in the *Journal of Biblical Literature* (March 1914) has shown that the name YHVH probably did not appear at all in the original so-called

*The claim is also made that it finds confirmation in the Elephantiné papyri (discovered 1906), which show the Jewish colony there receiving from Jerusalem a regulation for Passover celebration in 419–418 (at which date the law of Deut. xvi, 6f was therefore not known), but appealing in vain to Jerusalem in 409, whereat they turn to Samaria in 406 — an indication that Deut. xvi, 6f went into effect between 419 and 409 B.C.

*To feel the force of such "working-over" or "over-working," compare Chronicles with the canonics from Genesis to Kings.

Yahvistic account, and Dahse's immense accumulation of evidence in 'Textkritische Materialen zur Hexateuchfrage' (1912) is aimed to show that the variations in the divine name arose from divisions of Genesis into reading lessons, while the priestly portions are the insertions of a compiler. Most of all, however, Eerdmans' studies pierce deep into the matter and would draw in their train a complete reconstruction of Old Testament interpretation. Especially he is moved to reject the hitherto accepted notion that the legends of Genesis were originally monotheistic — for Eerdmans, in fact, *Elohim* retains its proper meaning, gods — that the Elohistic narrative is pre-exilic, that (priestly) portions are now to be found in Genesis. Of couse, the dominant school, thus boldly assailed in its strongholds, has not been slow to reply, and the battle rages on the Continent. A most recent and comprehensive statement of the case is to be found in Eichrodt's 'Die Quellen der Genesis von Neuem Untersucht' ('New Inquiry into the Sources of Genesis,' 1916).*

Yet another aspect of this great historical theme calls for signalization. The lamented Hebraist, Canon T. K. Cheyne, who opened his brilliant career with very conservative contentions, was irresistibly borne on to liberal positions, and thence, in his devotion to truth, still forward to others ever more and more radical, until he was finally landed in almost painful isolation. In particular, by his so-called North-Arabian Theory of Israel's origin and history, elaborated after adoption from Winckler, in connection with his further theory touching the name and worship of Jerachmeel, the rival and arch-enemy of Israel, he was led to far-reaching reconstruction not only of the Hebrew text, but therewith of all Hebrew history. These matters are too technical for full statement in this connection, but they may serve even here to hint the exceeding profundity of Old Testament problems.

Thus far, we have spoken of Israel's literature and history almost as if it were self-centred and self-contained, without determining connections with the world around. Such however was certainly not the case. The linguistic relations of Hebrew to its sister-tongues are not more clear than the historical, cultural, spiritual ties that bound Jacob to his brother peoples of the East. Hence it becomes imperative to conceive of Israel's history not as a detached episode or entr'acte, but as an interwoven and inextricable part of the whole grand drama of Semitic history as it unrolled itself between the Mediterranean and the Persian Gulf. Such a conception called for extraordinary intellectual effort, not only for linguistic attainments of the first order, but for wide-extended collateral knowledge and for historic imagination fitted for the boldest flights. These requisitions appeared fulfilled in remarkable fashion and measure in Hugo Winckler, too early sacrificed to science, who in his 'Israelitische Geschichte' (1895–1900) has sketched Israel in history with a breadth and sweep, a boldness and grandeur unattempted heretofore in such composition. Footing in large measure on the deep researches of Eduard Stucken ('Astralmythen der Hebräer, Babylonier und Ægypter,' 1896–1907), Winckler has not only reconstructed the career of Jacob in its Asiatic setting, but has sought to trace it out in its mythic or cosmic relations, as illustrating his fundamental doctrine of the «old-oriental world-conception» of history as the reflection on earth of a process accomplishing itself in heaven among the stars, a conception that has determined (he contends) the form assumed in the Scriptures by the legends of all the patriarchs. Here again it seems quite impracticable to enter into explanatory details, but almost certain that the contest between the followers of Winckler and their opponents, led on by the astute and learned Jesuit Kugler, cannot fail to spread a wonderful if weird illumination over the remotest patriarchal story.

Meantime it must not be inferred that far more conservative criticism has been either idle or ineffective. Not only the brilliant but sometimes erratic free lance, A. H. Sayce, has been indefatigable in his assaults, but the cautious Orr and the trenchant Wiener with many others have plied incessantly at the structure of «higher-critical fancies,» and not a few of its stones they have loosened or dislodged. Indeed, of all these matters we may say,

Verily, though, on the knees of the gods these issues are lying.

There is no finality in criticism, any more than there is in physics or chemistry or the 'ologies. In the most divergent views there may well be some elements of correctness, reconcilable only when caught up into some far higher synthesis. Criticism will never indeed regress to its elder positions, it will never return upon itself, as the youth will never become a child again, but neither has it attained maturity, much less the rigidity of age. The front of criticism reforms itself continually in its continual advance, and the honest and enlightened striving neither of radical nor of conservative can ever be lost. The true spirit of research declares to each of its results, even the most plausible, «I cast thee silently into everlasting time.»

For bibliography see article BIBLE.

WILLIAM BENJAMIN SMITH.

**BIBLE, History of New Testament Interpretation.** On passing now to the interpretation of the New Testament, we enter a region strewn thick with the embers of controversy, fresh and hot, where the conflicting interests are much stronger and livelier than those which beset the path of Old Testament study. At first blush, indeed, it might seem that our feet would rest on surer and safer ground, since

*Eerdmans' revolutionary criticism regards the main trunk of Genesis as a cento of legends regularly beginning with "These are the Tales (*Toledoth*) of ———"; on this stem, about 502 verses out of 1,553, the other two-thirds of the book having been grafted from time to time. These *Toledoth* are of the Antediluvians ($5^{1-32}$), of Noah, Shem, Terah, Abraham, Isaac, Esau, Jacob, and later of Israel, — all pre-exilic and polytheistic. In Genesis as a whole, he finds four kinds of legends: 1st, a few purely polytheistic; 2d, representing Yahveh as chief among gods; 3d, originally polytheistic but transferred to Yahveh as the One God; 4th, later additions (monotheistic). A striking example is Lev. xxiv, 15: "Whoever curseth his god shall bear his sin (i. e. shall be left for his patron god, or genius, to punish). But he that blasphemeth Yahveh's name, he shall surely be put to death" (by stoning). Eerdmans regards Leviticus as the book of Hezekiah's Reformation, as Deuteronomy is of Josiah's. He rejects the theory of parallel documents, J and E, and P, but supposes very extensive additions, redactions and influxes from the margin. Thus he is led to shiver many a lance with the Wellhausen school, as well as with Stucken, Winckler, Ed. Meyer and others.

the literature is so much more recent and grew up under conditions so much more modern and more readily discoverable. But a little reflection will show these distinctions in a large measure illusory. In the first place, the difference in age is not what many imagine. It is not a chasm of one or two thousand, but only two or three hundred, years that opens between the Testaments. There may indeed be material in the Old no older than some in the New. Then again, the conditions under which the New Scriptures were written, like "the conditions under which the new religion was preached, it must be avowed, were more varied and complicated than we have hitherto supposed" (Loisy, reviewing 'Der vorchristliche Jesus,'. 1906). The naïve views so gratuitously assumed for 1,600 years, which even now appear often under thin disguise in authoritative critical connections, do not call for much notice and need not long detain us.

The earliest Christian theologians were the Gnostics (as Harnack admits), and some of them brought a very high order of ability to the task of constructing a well-ordered system out of the chaos of "hopes, loves, creeds, together heaped and hurled" that tossed in the soul of the first two centuries of our era. Such names as Basilides, Valentinus, Marcion, and others should not be mentioned but with profound respect. It is true, these pioneers failed completely, but in such a great matter, to have attempted even, was great. Their abundant writings have all perished, and their thoughts have been grossly misrepresented, but even under the grotesque mask of travesty it is still possible to recognize features of grandeur. Origen thought it well worth while to study and to cite that primitive Commentary of Herakleon upon the Fourth Gospel. The earliest orthodox conception of the New Testament was that of a repertory of proof-texts, as expressed in Tertullian's favorite juristic term 'Instrumentum' (documentary proof), and again in the elegant distich of Samuel Werenfels (1657–1740), the triumvir of Basel, promoter of hermeneutic and the most distinguished divine among Reformers of that age:

This is the volume in which, for his dogmas each one inquiring,
Findeth his dogmas in truth equally each one his own.*

This conception prevailed for over 1600 years and is by no means yet finally displaced. Orthodox and heterodox alike proved their theses by appeal to the authoritative Word, and seemed to regard this judicial function as its main reason for being. Its main fulcrum was the postulate of the manifold (generally fourfold) sense, of which sufficient has been said. To feel the magic of this number four, one need only read Briggs' 'The Study of Holy Scripture,' much of which moves on the plane of Irenæus (III, 11). The procedure of Erasmus in editing the Greek text and translating it into Latin with notes (Novum Testamentum, 1516) was more rational and independent, was in fact a movement toward understanding the sacred volume, a movement urged on by Luther, who in his translation with bold injustice relegated Hebrews, James, Jude and Revelation to an Appendix. But when the authority of the Church fell away from the Protestant mind, the latter, dazzled and bewildered, felt the need of a guide and no other was at hand but the Bible itself; so that Protestantism quickly passed over in doctrinal and controversial phases into the worship of the Bible, and as such it still endures in wide and respectable circles.

This character of court of last resort required as necessary corollary the verbal inerrancy of the Bible, since it were vain to appeal to a supreme court that could err; and alongside therewith flourished, alike among Catholics and Protestants, the amanuensis-theory of Scripture-authorship, which regarded the writers as mere pens of the Holy Spirit (according to a saying ascribed to Gregory), so that their names and personalities were quite indifferent; who would care for the pen, knowing that God himself was the penman? — an attitude unfavorable to higher criticism. But over against this cherished dogma there grew up year after year a denser and denser array of facts in variants continually disclosed by the multiplying manuscripts and by textual criticism. At the same time the strong rationalistic trend of the 17th and 18th centuries, propagated from all the adjacent domains of human inquiry, spread resistlessly over the fields of theology and Scripture. The 19th century added the regulative notion of evolution, of gradual growth from seemingly simple forms to forms of endless complication. Under the urge of these forces New Testament interpretation has pressed forward year after year with quicker and longer strides toward its goal, the sympathetic comprehension of New Testament Scriptures.

The Biblical interpretation of the Middle Ages and of the Reformation embodies an immense amount of intellectual effort put forth in many cases by minds of the first order. However, its significance for to-day is by no means proportioned to its intrinsic excellence. From the principles from which it started and the methods by which it was guided, the modern spirit has departed definitely and finally; any return thereto would be like a return to Ptolemaic astronomy or to pre-electric mechanics. The student of to-day is not concerned with the "fourfold sense," nor even the "double sense," of the Scriptures, nor yet again with proof-texts wrested in controversy to the support of this or that system of dogmatic theology. On the contrary, his sole or at least his main concern is to understand the mind of the author; what he actually thought and felt and meant at the moment of writing. To such a student the earlier commentaries, learned and deep-thoughted as they often are, seem more like Meditations than Interpretations. No attempt can be made here to set forth the nature and extent of these musings, nor their value, which indeed depends largely on the mood of the reader. A similar state of case presents itself also in the study of the profane masters. When we read 'Ueber allen Gipfeln ist Ruh',' a vast perspective seems to be open before us; we think of solitary heights of achievement in art, in science, in action, in suffering and sacrifice, of the holy calm of the victorious soul. This may all be very legitimate and

* Hic liber est in quo quaerit sua dogmata quisque;
Invenit et pariter dogmata quisque sua.

even ennobling, but it is not interpretation, it does not reveal the mind of Goethe, who was writing of the deep hush of evening as it falls with awe and solemnity upon the mountain-tops.

So much premised, we may call the 2d century the "Apologetic" age of Scripture interpretation, marked by such names as Clemens Romanus, "Barnabas," Justin Martyr, Irenæus, Tertullian, whose main interest was to refute Gnosticism and especially, by allegoric interpretation of the Old Testament, to establish the Gospels as history. The "Philosophic" stage, best represented by Clemens Alex. and Origen in the 3d century, greatly stresses and develops the allegoric method but in a much wider interest, striving to elaborate a theology in some measure acceptable to the Greek intellect. As a reaction, arose and flourished in the 4th and 5th centuries the "half-critical and historical" schools of Syria, of Ephraem Syrus at Edessa and Theodore of Mopsuestia, "exegete of the Church," at Antioch. These in some measure recalled exegesis to the literal sense of the Scriptures and to a much soberer handling of the sacred text, and especially the Antiochan School spread its influence far and wide, over Athanasius, Chrysostom and Cyril in the East, and Ambrose, Augustine and Jerome in the West. But the exigencies of dogma did not allow any but half-way measures, a thorough-going historical criticism seemed out of the question, and the Antiochan method fell before the allegoric of Origen, which thenceforth reigned till the Reformation.

There followed the great millennium of "Authority," marked indeed by some very notable names, but contributing little or nothing to the comprehension of Scripture. The general contact of the Greek with the Latin mind was now interrupted, and the conduits by which the treasures of the former were transmitted to the latter took the inadequate form of Anthologies, so-called "sentences" culled from the Fathers. Isidore of Seville (560–636) led the way, exploiting chiefly, however, Augustine and Gregory the Great. In fact, the following centuries fed upon Augustine as the earlier upon Origen. For nearly 600 years such ox-blood capsules sustained the spiritual life of the generations, but with the dawn of the 12th century a new spirit of daring breathed upon the dry bones and they started up clothed with flesh and vigor. It was Peter Abelard (1079–1142) who inaugurated that splendid century and set Reason and Aristotle side by side with the Bible and the Fathers. His audacious *Sic et Non*, which ranged authority against authority in shocking contradiction, was followed by flocks of "Sentences" compiled with pious purpose, as by Peter Lombard (d. 1164). Aristotle was now enthroned, and special pleading ruled in the schools, with endless disputations. The stateliest structure of dogma was read by Saint Thomas Aquinas in his 'Summæ,' and Thomism still sways Catholic thought, as at Louvain. But in boldness, keenness and originality he had already been surpassed by the Gnostic Johannes Scotus Erigena (d. 877), who made caprice supreme in God (whose essence was nothingness), surpassing even Origen who had pushed free will and individualism to the utmost, even to the practical annulment of the "historic Jesus" (Harnack). The exceedingly acute William of Occam glorified doubt as the handmaid of God; by removing all the natural bases of mental security he sought to settle faith the more firmly on the rock of church authority. Anselm with his 'Cur Deus Homo' has also a place in this goodly company of Valhallans, of giants beating the air. No important step was taken toward understanding the Bible, the common armory of this endless warfare, until the 'Postilla Litteralis' of Nicolaus de Lyra, who with great learning, with keen acumen and with sound historic judgment strove hard to recall his readers from the "mystic" to the literal sense of the Scriptures, whom the following centuries admired but could not emulate. In Luther, he was partially revived, but the German was a moral and spiritual force rather than a sequacious thinker. System he left to Melanchthon (1497–1560), who was unequal to the task and fell back more and more into the abandoned paths of traditionalism. Not so Jean Calvin (1509–64), who was nothing if not rigorous and consequential and surveyed the whole field of religious controversy with scrupulous care in his calculations. Augustine came again to his own in the Genevan, the master-builder of the Reformation, whose method and authority have dominated the severer forms of dogmatic theology from that day to this. But neither he nor his successors raised seriously the previous question as to what the Scripture really is; nor even while proclaiming "The Bible, the Bible alone, is the religion of Protestants" (Chillingworth 1637), did they open up any safe paths of study in order to understand it as an historic product. On the contrary, they fell into a dogmatism as hopeless as the scholasticism from which they had emerged. The Scripture was treated as a complex of proof-texts, a homogeneous whole, self-contained and unrelated, its own commentary, a verse in John to be explained by a verse in Isaiah, a passage in Daniel by one in Revelation. Meantime private judgment, untutored, but illumined by "inner light," was raised to the seat of authority, and a disintegrative process set in, which has continued up to the present. From this the Catholics, even during the reaction sometimes called the Counter-Reformation, headed by Cajetan (1469–1534), Bellarmine (1542–1621), Francis (1567–1622), Jansenius (1585–1638), were sheltered by the still unshaken pillars of Church authority, but their new-quickened zeal while purifying the life, perfecting the organization and inspiring the activities of the Church, did not expand its intellectual horizon nor sharpen its critical insight. The seals of the Bible remained unbroken.

The first really modern phase of this protracted struggle* was the elder Rationalism as represented by H. S. Reimarus (1694–1768), seven fragments of whose huge work (still in the main unpublished) appeared (1774–78) at the hands of the Wolfenbüttel librarian, Les-

* Which is like nothing else so much as trench warfare, where each new capture leads up to a position still more tenaciously defended.

sing (1729–81), under the title of Wolfenbütteler 'Fragmente eines Ungenannten' (of Reimarus's 'Apology for the Rational Worshippers of God'). The author's standpoint is that of English Deism, and his unsympathetic treatment of the Gospels consists mainly in purely naturalistic interpretation of the miracles and a depreciation of the purposes and personalities of the early Christians. The title of the 7th Fragment, so highly praised by Schweitzer, is 'The Aims of Jesus and His Disciples.' Its literary merits are certainly great, and it inaugurates brilliantly the long reign of the purely natural and historical in the conception of Jesus, anticipating indeed in large measure the recent eschatological view. Hence the remarkably appreciative judgment of Schweitzer. The reaction against Lessing was violent, even to persecution. Semler assailed him in a famous apologue, and especially the Hamburg Pastor Goeze was vehement and unscrupulous in denouncing him for "hostile attacks upon our all-holiest religion." Lessing replied with courage and brilliance, extraordinary even for him, but was effectively silenced by state authority; turning then to the stage, he produced 'Nathan der Weise.' In simple truth, the comments of Lessing had contrasted very unfavorably in their reticence, hesitation and apologetic tone with the bold, resolute and uncompromising text itself of Reimarus; but this does not mean that the editor was of less heroic mold than the author, who enjoyed the incalculable advantage of being dead. Such rationalism, even in its ablest representative, H. E. G. Paulus (1761–1851), however acute in negation and however vibrant with hate and scorn, with all its "natural explanations" does not advance us very far toward a comprehension of the New Testament. Feeling how weak it was in construction, David F. Strauss (1808–74) renounced it utterly in his 'Leben Jesu' (1834–1835), and developed a mythical theory, which saw in the Gospel accounts only reflections, in the excited minds of Messianic enthusiasts, of the historic and prophetic utterances of the Old Testament, or else Messianic ideas modified by the personality of Jesus, whose human and historic character it did not occur to Strauss to deny. Whenever in the Gospel he read "That it might be fulfilled," Strauss beheld an incident devised by the Messianic imagination of the evangelist, as the flight into Egypt to fulfil the words of Hosea (xi, 1), "Out of Egypt I have called my son," the riding into Jerusalem to fulfil the mistranslated word of Zachariah (ix, 9), "Thy king cometh — riding upon an ass and upon a colt the foal of an ass." This work, marked by a pitiless acumen, and pushing German criticism suddenly over a precipice on which it had long been hovering, was passionately rejected on all sides* by German theologians,† but its most important reaction was in the mind‡ of F. C. Baur (1792–1860), pre-eminent in the annals of theology as the founder of its Tübingen School, who rightly objected that Strauss had prematurely criticized the Gospels as history, before he had criticized them as literature, and hence without any proper understanding of their origin and meaning. By a most comprehensive study of the New Testament and early Christian literature in general, he was led to develop in a long series of publications his own idea of the genesis of the New Testament as an example of Hegelian Thesis-Antithesis-Synthesis, the unfolding in successive stages of a primary contrast and conflict between two opposing views of primitive Christianity, the Conservative or Petrine and the Liberal or Pauline. In terms of this Petrine-Pauline antagonism and of successive efforts at reconciliation, culminating in the Fourth Gospel, he interpreted practically the whole body of early Christian writings. His construction, often exceedingly ingenious, was also noted for the late dates assigned to the great majority of the New Scriptures,— wherein he was partly anticipated by the premature Edward Evanson, who, in his 'Dissonance, etc.' (1792), adds (pp. 255–289) "my reasons for expunging also Romans, Ephesians, Colossians, Hebrews, James, Jude," and "the Epistles to the Seven Churches of Asia" in Revelation, a seed of thought, which, like so many in England, fell among stones. Baur's influence has descended in great strength through the preceding even into the present century, though it is now generally recognized that the New Testament problem is far too complex and profound for the application of his two-term formula; but in unity and comprehensiveness no other single formula has taken its place.

The learned labors of Baur commanded wide approval and almost universal admiration. Far different the fate of his deep-thoughted contemporary, Bruno Bauer (1809–1882), whose ten cumbrous and lumbering volumes of 'Kritik' of the New Testament (1840–1852, followed by more popular statements in 1874 and 1877) not only cost him his career and his position (his "venia docendi" was withdrawn in 1842) but also provoked almost unanimous rejection and even abhorrence. He who anticipates is lost. Of all his generation he saw furthest into the real problem of the genesis of the Gospel and the character of Christianity; he alone conceived them as environmentally determined, as issuing from the total complex of historical conditions, social and cultural, of that imperial age. His critical constructions were indeed almost wholly of sand, but his grasp of the problem itself was broad and firm. Ostracized in his own country, his thought found welcome among foreigners, especially in Holland, with A. D. Loman, the Teiresias of the North, with Pierson and Naber (Verisimilia, 1886) and later Van Manen (Paulus, 1890), and Bolland, with R. Steck (Der Galaterbrief, 1888) and Edwin Johnson ('Antiqua Mater,' 1887). At last he has been restored to Germany, as by Wrede ('Das Messiasgeheimnis,' 1901) and the authoritative Schweitzer's 'Leben-Jesu-Forschung' (1906, 1911),—in which he figures second only to Strauss, and where we read: "Bauer's 'Criticism of the Gospel-History' is worth a good dozen 'Lives of Jesus' . . . For his contemporaries he was

* Schweitzer's incomplete list names sixty refutations of Strauss and eighty-five of Renan.

† Of whom Ullmann should be recalled as its foremost refuter ('Historisch oder Mythisch?' 1838).

‡ Or, at least, apparently "in the work" — for Baur denied the connection.

merely a fantast, but in his fantasies after all a deep insight lay hidden. It had been revealed to no man in such comprehensive manner that primitive and early Christianity cannot be understood as the simple result of the preaching of Jesus, but that it reflects the experience of the World-Soul in the first generations of our era. Since Paul, no one had seized with such power on the mystical in the superpersonal being of Christ, and Bauer, translating this into history, made the Roman empire, as it lay in throes of death, into a 'Body of Christ.' »

If Bauer's 'Kritik' was despised and rejected of men, the like could not be said of 'La Vie de Jésus' (1863), by the supreme literary genius, Ernest Renan (1823–92). Begun in Syria at the bidding of his noble sister Henriette, before their fatal exploration of the upper Lebanon, with intent to "evoke from the past the Origins of Christianity," by an Hebraist of the first order, it is steeped in the romance and mystery of the East; through the far-off haze of legendary marvel looms up in its pages the spectral figure of the "noble founder," the "incomparable man." It is not likely that such exact antiquarian knowledge and high imaginative power and rare charm of style will ever again unite in the effort to produce a convincing portrait of the Jesus of the Gospels as an extraordinary carpenter. But its failure could scarcely be more complete. Though 60,000 copies were sold in four months, and though it shook all Christendom with its echoes, it is now seldom named, its permanent value lay almost solely in the proof by example that the task it attempted could never be performed. Close on the heels of Renan's 'Life of Jesus' came Theodore Keim's 'History of Jesus of Nazara' (3 vols., 1867; 1871; 1872), written with far greater critical knowledge and conscientiousness, but with far less literary skill; it strives hard to find a history proper, a development in the Gospel story; it tells about "the Holy Youth," "the Galilean Spring," "the Galilean Storms," "the Signs of Downfall," and many such, in the effort at historic plausibility, but all its learning and skill do not blur the fact that it builds a house of cards on a base of mirage.

Since New Testament criticism passed out of the sign of Baur and Tübingen, and by that of Renan, its course has been steadily onward though at times erratic. For a while there seemed to be an era of disintegration: not only did the Scriptures, in particular the Gospels and Revelation, crumble under incessant probing and analysis, but the problems themselves became more sharply separate and distinguished; investigation deliquesced in every direction into various problems, and each of these presented its diverse phases.* Among the keywords of controversy should be noted: (1) "The Marcan Hypothesis"— that 'Mark's' Gospel is the earliest, nearest to fact, and historically the most plausible,— propounded, 1838, by the continuator of Strauss, the philosopher, C. A. Weisse, in 'Die evangelische Geschichte,' confirmed by C. G. Wilke in 'Der Urevangelist' (1838), since when it has gained increasing recognition approaching general acceptance in some form, though opposed by Tübingen, in particular by A. Hilgenfeld (1823–1907); (2) "the Two-Source Theory" — that an original 'Mark' and the 'Oracles' or 'Logia' were the prime elements out of which our present Gospels were derived and compounded; (3) "the Son-of-Man Question" — as to meaning and use of the term *Bar-Nasha* (Son-of-Man), and whether as a self-designation of the Jesus it can be historic, concerning which see Dalman's 'Die Worte Jesu' (1898) and N. Schmidt's exhaustive treatment in the 'Encyclopædia Biblica' (4705–40); (4) "the Johannine question" — concerning date, authorship, composition and aim of the Fourth Gospel, elaborated by Bacon (1909) and much illumined by recent publications of Schwarz, Wellhausen, Soltau, Wendland and others; (5) "the Problem of Acts," — authorship, date, composition, earliest form, later editions — advanced by F. Blass; (6) "the Pauline question," — authorship, date, structure of the Pauline epistles, especially 'Unto Romans': the latest phase of this high argument was opened by the Dutch seer, A. D. Loman in 'Quæstiones Paulinæ' (1882), followed by Pierson and Naber in 'Verisimilia' (1886), then by Michelsen, Steck, Völter, Van Manen (who, at first an opponent, passed over to Loman's side in his 'Paulus II. De Brief an de Romeinen' (1890), the most complete statement for the 2d century date), by W. B. Smith and others named in Van Manen's article on 'Romans' in 'Encyclopædia Biblica' (4127–4145, 1903), also in Schweitzer's 'Paulinische Forschung' (1913); (7) "the Apocalyptic question" — dealing with the elements blended in 'Revelation,' their dates, origins and meanings, matters largely cleared up by Völter, Vischer and their successors; (8) "the Eschatological view" — that Christianity originated in a semi-political Messianic movement started by the Baptist, continued by Jesus, in a Palestinian yearning or striving for a kingdom of God as the end, the last things (*eschata*),— a view championed by J. Weiss and A. Schweitzer and much in vogue, especially in Great Britain; (9) lastly, opposed thereto, "the Hellenistic or comparative view" — that early Christian doctrine and ritual, especially Pauline portions, were deeply dyed with elements derived from the cults and mysteries then flourishing in the Roman empire,— a view favored by Cumont, Gunkel, Pfleiderer, and particularly recommended by the philologist R. Reitzenstein. To these must now be added (10) "the Indian question:" Does the New Testament contain Buddhistic elements? Passing by the extravagant claims of R. Seydel and others, criticism now settles down in the conviction that in at least four items — Simeon (Luke ii, 23–35), Temptation, Peter's Walking on Water, Miracle of Loaves — the Gospel has drawn from the well of Buddha. R. Garbe admits as much in his 'Indien und das Christentum' (pp. 12–61, 1914), and is now prepared to concede still further the dependence he had earlier denied *in toto*. Indeed, it seems highly probable that John ix, 1–3 must swell the list, since only the doctrine of Karma can explain the question, "Did this man sin (or his parents), that he was born blind?" In this long battle the American scholar A. J. Edmunds has won

*Though such as Otto Pfleiderer (1839-1908) continued to group them all as a unit ('Das Urchristentum', 1878, 1902, Eng. tr. 1906).

especial distinction ('Buddhist and Christian Gospels,' 1902, 1905, 1908–09), as well as the Hollander, van Eysinga.

However, it is now seen more and more clearly that all these riddles are at last only one, they are different facets of the same polyhedron, the varying aspects of one fundamental question: "What think ye of the Christ?" What was the origin and content of proto-christianity? Since this latter is far away the most imposing as well as the most mysterious single phenomenon of man's history, it seems clear that this question yields in interest to none that has ever engaged his attention. It may be well, then, to note the different attitudes that may be and actually are assumed in its presence.

The Traditional view, too familiar in all the creeds of Christendom to call for more than the briefest mention, is very imposing. It regards Scripture as the inspired and authoritative depositary of God's self-revelation to man, having in view secondarily the instruction, civilization and moralization of mankind, but primarily the salvation of the immortal souls of all the family of heaven, the church of the redeemed. The original single vehicle of this revelation was the People Israel, as represented especially in Moses and the prophets, authors of the Old Testament; but the later bearer was the Son of God Himself, in the form of the son of Mary, "very man and very God," along with His immediate disciples and apostles including all the authors of the New Testament. Both these forms of the one continuous revelation, but especially the latter, were extra-natural, neither included nor paralleled in the forces and processes of the universe as everywhere else in operation.

The second attitude, that of Liberal criticism, rejects this last thesis of Tradition and insists on understanding the whole body of Scriptures, with all their attendant history, as normal historic products of human activity under extraordinary but strictly natural and intelligible conditions, and Christianity itself as the most richly gifted of the family of four (Islam, Zoroastrianism, Buddhism being the others — cp. Söderblom and Troeltsch,—like the family of Napoleon, Lucien, Joseph and Jerome), and its Founder, the Carpenter-Prophet of Nazareth, as an enthusiast or revivalist of whom scarcely anything can be said with confidence (cp. Schweitzer's 'Leben-Jesu-Forschung,' 2d ed.).

At this point the new Radicalism joins issue and enters protest. Liberal critics, after a century of incessant endeavor, can find not one point of common consent in their figure of Jesus (Jesusbild), and the attempt to account for the immediate and world-wide progress and success of the Christian propaganda in terms of a bundle of contradictory guesses seems to the Radical to be not only grotesque but even censurable trifling; in particular, it leaves the central fact, the worship of the Jesus as God, entirely unexplained and unexplainable, besides degrading Christianity down to the most irrational and unworthy of all great religions, to a mere man-worship, a ridiculous compost of delusion and fraud. Such degradation could be allowed only under compulsion of logic and of the surest and exactest facts, but the Liberals present no such facts, not one on which they themselves can even nearly agree. Despite the immense learning, devotion and ability by which it is recommended, liberal criticism appears to the Radical to be utterly impotent in presence of the larger facts of early Christianity.

On the contrary, Radicalism (as in 'Ecce Deus' and 'Der vorchristliche Jesus') regards all cosmic history as the struggle of the individual spirit to realize its own universality, its own oneness with the Whole, and the history of Israel (set forth in the Hebrew Scripture) as one signal phase of the general monistic striving, as the continuous national effort to form, appropriate, assimilate and finally propagate the conception of God as One, and in second line as dwelling (coming to consciousness) in His chosen people, that had come to know Him. Consistently, Radicalism regards the proto-Christian propaganda as the final phase of this national effort, at length become international in the Dispersion, as the prolongation and extension of this same Monotheism incited to enthusiastic evangelism by contact with Hellenic philosophy, especially in the doctrine of the Oneness of God, a doctrine reaching in a long line of thinkers as far back as Amenophis IV (Ikh-Naton, 1370–1350 B.C.), and ramifying through all the higher enlightenment of Greece and her pupil Rome. This monotheistic propaganda, zealously preached from shore to shore of the Mediterranean, by missionaries (apostles) of the Dispersion, at first secretly under many devices and slogans, finally concreted around the figure and in the worship of the Saviour-God Jesus, i.e., of God as Jesus, *Soter*, Saviour, under the aspect (or person) of Saviour from sin (i.e., idolatry, the supreme sin of unfaith to God). It was also combined with the purer Jewish doctrine of the Messiah (Christ), and at the same time deeply tinged with elements derived from venerable faiths sanctified in the mysteries of contemporaneous cults. The "Eternal Gospel" of this early, even prechristian, propaganda is clearly proclaimed in Rev. xiv, 7, as "Fear God and give him glory," which is pure monotheism, recalling the last words of the Preacher, xii, 13: "Fear God and keep his commandments, for that is the duty of every man."

In looking back over the way we have come, it seems exceeding long and often exceeding steep, and one might wonder whether it was all really worth while, whether either in the process or in the result there was any justification for the prodigious expenditure of energy, for the concentrated endeavor of so many minds for so many hundreds of years. For him that measures life in terms of bread and butter and fine linen and yachts and motor cars and opera boxes, the answer may be a decisive No. Not however for him that regards the soul as worth more than food and raiment, and the revelation of Spirit as the increasing purpose of unending time. To him it may well seem worth while, and all the lingering stages in the monotheization of the world will appear quite as justified and necessary as the geologic ages that have fitted the earth for the kingdom of Man, and Man for the kingdom of God.

For bibliography see article BIBLE.

WILLIAM BENJAMIN SMITH.

**BIBLE, Versions of the*.** No other book has received the honor of such frequent translation as the Bible. The history of this immense and immensely important body of human effort, easy to expand into volumes, but here to be compressed into a few columns, naturally falls into two divisions concerning, respectively, the Old Testament and the New, and the former again into two sections treating, respectively, of Jewish and of Christian translations.

**Jewish Translations of the Old Testament.**— Already, under Text Criticism, it has been stated that the elder portions of the Old Testament existed first in the Canaanite script, of which the scantiest traces survive. Says the Babylonian Talmud (Sanh. 21b): "At first the law was given to Israel in Hebrew script and in the holy tongue. Again, in the days of Ezra it was given to them in the Assyrian [i.e., Syrian] script and in the Aramaic tongue. Israel chose for themselves the Assyrian script and the holy tongue, and they left to the idiots [Kuthim, Samaritans] the Hebrew script [*libona'ah*] and the Aramaic tongue."

This change of script from "Libonæan" or *da'as* (chiseled) to our present square [*merubba'*] Hebrew was almost in effect a translation, at present quite beyond us to control or appraise. We cannot get behind the existent square form, not even by help of Samaritan manuscripts or monumental Samaritan derived from the earlier script. Deep-thoughted Rabbis have feigned that the Law was originally given to all nations (but rejected) and engraven in all tongues on the altar stones (Jos. viii, 32). But the first real call for translation was heard when Israel put away Hebrew and adopted the sister Aramaic, first in the north, then in the south, a change speedily effected among Jewish military colonists at Elephantiné (6th century B.C.), but passing over Palestine gradually through 800 years. The *Targum* (translation, especially into Aramaic) was made at first orally by the appointed interpreter, *Targeman* (whence "dragoman"), as the Law was read verse by verse, or the Prophets section by section. Written Targums, at first disfavored if not forbidden for public use, were allowed in private, whence they forced their way into the Synagogue. Gradually *Yerushalmi*, the Palestinian Targum of the Pentateuch, took definite form, to be displaced gradually by the Babylonian (Babli), now known through the version called of Onkelos (Aqylas, Aquila). Of this learned revision, in the main faithful, of looser predecessors, the older strata go back to Aqiba (ca. 135 A.D.). The surviving 'Yerushalmi,' miscalled 'of Jonathan,' is later than the Pentateuchal *Babli*, but contains very old elements, along with much sermonic enrichment. There is also a *Babli* of the Prophets, ascribed to a Jonathan ben Uzziel, disciple of Hillel,—a mixture of old and new, faithful in the Earlier prophets, paraphrasing the Later; also a Palestinian Targum, never officially adopted, of the Writings (*Kethubim*, Psalms to Chronicles), and another, in scant fragments, of the Prophets. Very characteristic of all is the tendency to tone down, to smooth out the asperities of the original, especially by removing anthropomorphisms (to guard the glory of God) and many compromising phrases (to shield the honor of Israel), as well as the bold beauties of personification in general. Thus they approach the commonplace, but remain extremely eloquent witnesses to the growth of the Jewish soul.

The world-wide Dispersion of the Jews gave them all tongues of the Gentiles (Acts ii, 8–11), and accordingly the translations of their Scriptures were numerous, but all have vanished,— unless some fragments of the Egyptian be preserved in the Christian Coptic version,— with the illustrious exception of the Septuagint, already treated in Text Criticism (q.v.). As rendering possible the Christianization of the ancient world, the day of its birth was a fast day in Palestine and compared to the natal day of the golden calf. Some at least of the Seventy showed acquaintance with Greek literature (as in Job), whence the extremely interesting question as to how and where the Old Testament reflects (say) the Iliad, on the average five centuries older. A reaction from the Septuagint, taken over by the Christians, was the translation of the Pontic proselyte Aquila (guided by Rabbis Joshua and Eliezer), almost by syllables; a supposed reaction from this was the Christian paraphrase of Symmachus, while the Jewish proselyte Theodotion aimed to avoid both extremes. Herewith opens a chasm of nearly 12 centuries in Jewish-Greek translation. Not till the 14th century did Jewish learning again essay to turn the Hebrew into (Attic) Greek, the Aramaic of Daniel into Doric. A New-Greek version (in Hebrew characters) appeared in Constantinople, 1547. The next great attempt to vocalize 'Hebrew Truth' in the world was made by the famous Gaon Saâdya (892–942) in his Arabic translation still owned and read by exiled Jews of Yemen, adapted by Abu Said in the 11th century to the needs of Samaritans, and highly valued by the competent. Saâdya's foes, the Qaraites, also had their Arabic version but their Tataric was much later (1640). Jewish learning in north France produced no translation of the Hebrew Bible save in detached passages scattered through Rashi's Commentary, and others', as well as in various glossaries. Through the *Postillæ Perpetuæ* (Rome, 1471–72) of the Christian convert Nichoias de Lyra (1270–1340), Rashi made a deep impress on Luther's German translation.— Spanish-Jewish learning also guarded zealously without translating the Hebrew text, though Hayyuj of Cordova (?950–1010?), by laying bare in Arabic the tri-literal nature of Hebrew roots, grounded Hebrew linguistics, and the physician, Ibn Janach (?985–1045?) "Greatest of Medieval Hebraists," by his grammatical studies, paved the path toward a comprehension of the Bible. The great eye-opener, Ibn Ezra, blazed the way for modern criticism, but did not translate; neither did the Kimchis; Jewry had not forgotten the lesson of the Septuagint. But at the close of the 14th century a Jew turned Isaiah, Jeremiah and part of Ezekiel into Persian and the Pentateuch in Persian by Rabbi

* Several of the more important Versions have already been discussed incidentally, but only in their text-critical aspects and significance; it is the historical and literary features that must now receive some attention.

First edition of the Pentateuch in Hebrew, Bologna, 1482. The page represents the end of Leviticus and the beginning of Numbers; parallel to the Hebrew text there is the Targum, the old Aramaic translation ascribed to Onkelos, printed without vowels in Rabbinical characters, while the top and bottom of the pages contain the commentary of R. Solomon ben Isaac of Troyes, commonly called Rashi

First edition of the Psalms in Hebrew, Bologna, 1477. The first part of the Bible printed in the original Hebrew. The text has no vowels and accents; each verse is followed by the commentary of R. David Kimhi, in which an Italian censor has crossed out some words

Jacob Tawos (honored with a place in Walton's Polyglott, Vol. IV) appeared at Byzantium, 1546. The next year, along with the New-Greek, appeared the Spanish version, also in Hebrew letters. In 1553 appeared a noted Spanish translation, the Ferrara Bible, Rabbi Arragel's version (1422) revised, in two editions, one for Christians, one for Jews, made at Catholic command, with Franciscan help. One unprinted partial Jewish-German version dates from 1421, another, printed, of the Pentateuch, by the Christian Jew, Michael Adam, appeared at Constance 1543, and Elijah Levita translated the Psalms (Venice 1545). At Amsterdam in 1649 appeared the Jewess's Bible, Teutsch-Homesch (German-Pentateuch), and 30 years later two other such Jew-German versions, complete. After the great racial calamity of expulsion from Spain (1492), where Jewish learning had flowered in splendor, Bible-study stagnated for centuries among the Jews, who, with few exceptions, sank themselves in the Talmud. The Renaissance of the Jews was marked by a return to Scripture, especially by Moses Mendelssohn's epochal translation of the Pentateuch into German (1783). Still better Hebraists (called *Bi'urists*, interpreters), as David Friedländer (1750–1834), translated and annotated Prophets and Writings, in sober rationalistic spirit, with no great critical keenness or historic sense. But the whole movement was revolutionary enough to arouse the resolute opposition of Conservatism, and there followed the German translation of Zunz (mainly the work of his friends), 1837–38. A. Geiger did not translate, but in his 'Urschrift und Übersetzungen' (1851) he profoundly interpreted text-history and the elder versions as mirroring the religious evolution of his people. In Italy the movement issued in I. S. Reggio's Italian Pentateuch translation with Hebrew commentary (Vienna 1821), and later in founding a rabbinic school in Padua, headed by the chief modern Jewish biblicist, Samuel David Luzzatto (1800–65), who raised biblical criticism to a profession among his people. Though strongly conservative, his Italian translations of Isaiah, Job (1855, 1853) and the Pentateuch (posthumous, 1871–76) show deep and exact philology along with a scientific conscience. So much can hardly be said of S. R. Hirsch's German version of the Pentateuch or of others, learned and acute, but straitened in spirit. Not less erudite but far more daring is the eight-volumed work of A. B. Ehrlich (1905, 1908–14).

As the walls fell away and the Jews emerged into 19th century life, translations multiplied rapidly. Leading the van is the French (1831–1851) of S. Cahen; also the people's version (1899–1906) by the French Rabbinate (headed by Z. Kahn), based largely on Wogue's version (1861–69). Less significant was a succession of versions in German, Dutch, Russian, Hungarian. As early as 1789 Delgado corrected the English Authorized, and in 1839 Selig Newmann emended it, as did Michael Friedländer (1884). Kalisch commented on the Law, and Benisch published a complete English version (1851–56). In America Isaac Leeser, footing on the Authorized, with help of German versions, issued a translation (Philadelphia 1853) generally used in the synagogue, English and American. But very recently the great design, conceived 1892, of the Jewish Publication Society (organized 1888) has at last been accomplished (1917) mainly through the unwearied zeal of M. Margolis, sustained by the munificence of the Jewish Mæcenas, Jacob H. Schiff — being nothing less than a thorough revision, suited for the synagogue, of the Revised Version of 1885, wherewith has been spoken the latest and best word of Jewish scholarship in the translation of the Old Testament.

**Christian Translations.**— Inasmuch as the two Testaments have held equal rank in the Christian consciousness for 17 centuries, it would serve no useful purpose to separate them in this discussion; accordingly we shall treat them together, except where distinction is expressly made. As we have seen, the sole object of Jewish translations, the all-important Septuagint only partially excepted, was to bring the Holy Writ to the understanding, not of the Gentile but of the Jew himself, to whom the Gentilic tongue was vernacular. Likewise, the aim of early Christian translations was to bring the pure "Hebrew truth" home to the mind and heart of the Christian. As the new religion, the "Eternal Gospel," "Fear God and give Him glory" (Rev. xiv, 7), was from the start a crusade against idolatry, a zealous propaganda of monotheism, from the first the audience was mainly pagan, composed mostly of "God-fearing Gentiles" and proselytes to Judaism. Of these, in great part, the faith was built on some Greek version of the Scripture, particularly the Septuagint, and it was in Greek that the first public preaching was spoken and the first records thereof committed to writing, though some very early Christian compositions may well have been Aramaic. For nearly two centuries the Christian seems to have rested content with the Septuagint, subject to slight alterations, but when the Jew disclaimed it as incorrect or inadequate, substituting the literalism of Aquila, the logical loss was keenly felt, and a reply seems made in the loose rendering of Symmachus. This also was soon found insufficient, and in the first great critical essay, the Hexapla, Origen sought to mass all the evidence in point and to show the way clear to the sacred goal of aboriginal "Hebrew Truth." As this came more and more to be regarded as altogether unique and indispensable, the one and only record of primitive history, the single depository of divine will, purpose and power, to the more enlightened the need seemed imperative of ascertaining it, if possible, with absolute exactness and completeness. Origen, the most competent explorer, failed, however, to find it, and the search seemed little hopeful. Nevertheless, sufficient appeared to be known.

But the Greek was not the only early Gentile-Christian consciousness. The noble Syriac language, a variety of the Aramaic, was widely spoken, and various attempts were made at a Christian Targum in this tongue, even now not numbered among the silent. Of these the most successful was the so-called *Peshitta* ("simple," "common"), at once faithful and elegant, tinged with traditions of the Jews (whose help made it possible), but often under the spell of the Seventy. Far away, in north Africa and other western provinces of the empire, at an early date Latin had begun to displace Greek,

and the pressing need of a version in that tongue was met in various ways: there is no Old Latin version, but many Old Latin versions, varying indefinitely with the knowledge and skill of the translator and the text of the Greek copy at his hand. It was Lachmann that first restored these modest versions to their critical rights, but their decisive importance (for the New Testament text) is only now coming to full recognition. All were strictly popular, rustic in their Latinity already departing from the classic norm at Rome toward the varied Romanic speech of to-day. Gradually even the speech of the Capital fell away from the Greek, and the need was felt of an authoritative Latin Version. By far the prince of Christian scholars was Jerome; to him Pope Damasus (346–420) committed the task of revision. He began at Rome by setting a gentle hand to the Psalms (383), and Saint Peter's still resounds with his *Roman* Psalter, introduced at once by Damasus. In 392, as Hermit of Bethlehem, he re-revised by the Hexapla, and this Psalter, first introduced in Gaul and hence called *Gallican*, still holds its place (against his third version, the *Hebraic*) in the *Vulgate*. On this latter he toiled at intervals for 15 years, learning Hebrew in Palestine under Jewish teachers and guides. Slowly at first, but steadily, his translation (complete but for certain Apocrypha, which he too lightly esteemed) won its way to universal recognition over all others, the greatest single work of Catholic scholarship, and in the fourth Tridentine session (8 April 1546) it was stamped with the signet of exclusive authority. Jerome aimed to be faithful to the sense, but classic in style. Slight as is the critical value of this Vulgate, its influence upon the religious life of western Europe is beyond estimation. An authorized Catholic translation is the *Rheims and Douay Version*, made by English refugees and called the *Douai Bible* (1609). Intended as a corrective of the multiplying Protestant versions, it conforms too closely to the "authentical Latin" to be idiomatic English, and as a tertiary product has no critical worth; nevertheless, it is happy in some turns of expression and seems to have molded the Authorized Version at certain points. There are many such translations of translations, in Arabic, Armenian, Coptic, English, Ethiopic, Georgian, Gothic, Persian and other tongues, ranging over a thousand years. Conspicuous is the Gothic preserved in fragments on the silver-lettered purple *Codex Argenteus* (ca. 500?) in the Upsala University; Philostorgius (b. 364), as quoted by Photius (c. 820–91), ascribes the Gothic translation of the whole Bible (except Kings, omitted as too warlike) to Wulfilas, Apostle of the Goths, which is stoutly gainsaid by L. Wiener in his revolutionary 'Commentary to the Germanic Laws and Mediæval Documents,' which with his 'Contributions toward a History of Arabico-Gothic Culture' (I, 1917) would overturn the structure of Germanic philology.

Through all the watches of the mediæval night Jerome reigned in the West, the Seventy in the East. As new tongues budded forth on the Latin stem, rude paraphrases appeared, often as interlinear glosses, especially in the Psalms, the book of devotion, and these were gradually improved but remained quite devoid of authority, jealously reserved by the Church for the Vulgate. During the uneasy slumber of the 13th century, premonitions of awakening were faintly heard in widely scattered and far more earnest attempts to get nearer the divine truth in vernacular versions, as the partial Waldensian in Provençal and the first complete French translation (c. 1250). Similar stirrings were felt in Italy in the 14th century, but the first complete English Bible goes back only to John Wyclif and his friends (1382), in which his own share is problematic. A "curialist" till 1374, in the last 10 years of his life he won the fame of a reformer (politico-religious) and the father of English prose, the latter rather by his 'Sermons,' for his English version is poor and slavish to the "Latyn." Germany meanwhile was prolific of translations, and John Hus, following Wyclif along so many lines, among the many improprieties for which he suffered at the stake (Constance, 6 July 1415), produced a vernacular version for his Bohemians. Movable type (1448), by lessening cost, gave wings to the Word. The Vulgate was the first to leave the press (1452–56), then over a dozen German editions, then the Complutensis (1517–20), then the Aldine (Venice 1519). Morning was now on the mountains, and edition after edition appeared in Hebrew, 21 before Luther's rupture with Rome (10 Dec. 1520), among these the first great Rabbinic Bible (Venice 1516), dedicated to Leo X by the Christian Jew, Felix Pratensis. Catholics now felt the need of a new version, and many not without merit were made. These, being Latin, were still voiceless to the people, who cried for the Word in their own tongue. Luther in his German translation (from the Hebrew, in the Brescia edition of 1494) gave the first great national answer. Himself hardly equal to the task, he leaned heavily on Nicholas de Lyra; but he labored long and conscientiously and well, translating not for scholars but for the man-in-the-street, occasionally in a controversial spirit, and finally (1530–34) erecting an enduring monument of German literature and determining in large measure the set of German speech, as well as the form of various following translations into other Teuton tongues.*

According to Conybeare, unsurpassed in beauty and because of its fidelity almost as valuable as an original text is the Armenian version of the Old Testament made by Mesrop, Sahak, Eznik, and others, with various manuscriptural helps, from the Greek (though Moses of Chorene says Sahak used the Syriac), between 397 and 430, and revised later. Perhaps a century older and hence valuable according to Tertullian's "id verius quod prius," is the Armenian version of the New Testament made from the Peshitta (as was also the related Georgian), but revised from the Greek about 400. The Georgian Bible (from the Greek) is ascribed to Mesrop, inventor of the Georgian alphabet. The Armenian Bible, first printed from one manuscript with text adapted to the Vulgate (Amsterdam 1666, Venice 1733), was first critically edited by Zohrab (Venice 1805). Of minor importance are many versions derived from the Armenian (noted in Scrivener's 'Introduction' and Gregory's 'Prolegomena'), and such as the Philoxenian (lost except 2 Peter, 2 and 3 John, Jude and Revelation), of 508, a Syrian paraphrase revised (616) into slavish fidelity by Thomas of Heraklea (hence in this form called "Harklean"), and the "Palestinian," a lectionary of the 6th century, formerly referred to Jerusalem, but now, following Burkitt, to Antioch.

France owes her earliest version (1160) to the Waldensian chief, Pierre de Vaud, the next to Guyard des Moulins (1294, published Paris 1488). At Lyons, 1477, appeared the first Testament in French print, followed in 1487 by the stately Bible dedicated to Charles VIII and by others similar.

* The Swiss "Zürich Bible" (1529–30), revised frequently and as late as 1895, was only in later parts independent of Luther's version.

More for the people were the Testaments of D'Etaples (New, 1523; Old, 1528; both, 1530). Made from the Vulgate, slightly revised (at Louvain) in 1550, and again in 1608, 1621, 1647, though proscribed in 1546, this became the popular version in Catholic France. More modernized were Lemaistre's huge Port-Royal Bible (1667–87) and R. Simon's New Testament (1702). Lassere's Gospels (1887), accounted excellent, failed of ecclesiastic approval. The received Protestant version (by Calvin's cousin, P. R. Olivetan, published in 1535 by Waldenses and improved later), was revised in 1588 by Genevan pastors and used by Astruc (1753); modernized (1724, 1744) by J. F. Ostervald, it was again revised, the Old Testament in 1805, the New Testament in 1835. Still later and better, the revisions by Oltramare (1872), Segond (1874, 1880), the French Bible Society (1881), and many others, especially Rabbi Cahen's (Hebrew-French) edition of 1830, and Crampon's, revised by the Jesuits (1907).

Following a Dutch version of perhaps 1300, parts of the Scriptures were printed at Delft in 1477, and the next year saw the first complete ("Cologne") Bible in Low German. Luther's New Testament was revised and published in Dutch (Basel and Amsterdam, 1522), and Erasmus' Greek text was turned into "goode platte Duytsche" (Delft 1524), and the whole Bible at Antwerp, 1526. Catholics followed with the New Testament in 1527 and the Old Testament in 1548. As the land of the free, Holland was most prolific of translations. The Dutch official version of 1632 appeared as "Staaten-Bibel" in 1636. Supreme in scholarship is the "Synod Bible" a revision at request by Kuenen's school (New Testament 1866, Old Testament 1897–1902).

Though parts of the Scriptures were turned into Scandinavian as early as the 12th century, the New Testament appeared in Danish first in 1524, under Christian II, and in 1529 Petersen's New Testament and Psalms, bettered in 1531, appeared at Antwerp and met with more favor. Luther's German Bible passed over into Danish in 1550, was revised in 1605–07, again in 1819 and 1872, and for Norway (separated from Denmark 1814) in 1830, 1857–69, 1890, 1904 (New Testament), besides a new popular version (New Testament) in 1889 and 1899. Luther's New Testament went into Swedish at the hands of Andrae and Petri (Stockholm, 1526) parts of the Old Testament 10 years later, the whole Bible in 1540–41, followed by various revisions. A new revision by Sundberg, Toren, and Johanson received official Lutheran sanction in 1883. Many individual translations of one or both Testaments have met with favor, those of F. O. Myrberg being accounted first in scholarship and literary quality. The Icelandic New Testament (1540) and Bible (1584) were revised in 1644 and often since.

Passing by the essays of the brothers Methodius and Cyril (855–70, whence the Cyrillic alphabet), we find a Slavic version for Russians 600 years later, first printed at Ostrog (1581) at instance of Prince Constantine, revised at Moscow 1663, again, more carefully, at command of Elizabeth 1753, modernized at bidding of the Holy Synod but published only partially (1818–25) under opposition, till completed under Alexander II, 1876. Other Slavs received their first versions: Czechs, 1488, though there is said to be in Vienna a 3-vol. translation of the Old Testament made in 1378 by order of Emperor-King Winceslav; Croatians, 1495; Poles, 15th century; Wends, 1547; Slovenes, 1555; Bulgars, 1828; Serbs, 1847. The Magyar New Testament was printed first in 1541, the Old Testament in 1590; a revision is now in hand. The Finnish New Testament appeared in 1548, the Bible in 1642 and a new translation in 1859; the Lithuanian-Lettish New Testament and Psalms appeared in 1662; the Lapp Bible dates from 1838–40.

The oldest Italian version (1270) is the Waldensian of Jacques de Voragine; Nicolò de Malherbi was first to print a Bible in Italian (Venice, 1471); Buccioli's better version from the original tongues (Venice 1530–32) was proscribed. Still other versions appeared at Venice, Zaccaria's 1532, Giglio's 1551. A Protestant New Testament in Italian, appeared the same year at Lyons, and the whole Bible at Geneva in 1562 and in 1607 (translated by Giov. Diodati, a famous work). The Turin version by Archbishop Martini (1776) pleased the Church, was adopted by the British and Foreign Bible Society, and issued in Roman Catholic revision, 1889.

Though a Catalonian version of the New Testament was made in the 14th century, when Jewish-Spanish versions (Old Testament) were common in Castile, and a Bible was printed at Valencia in 1478, the first printed Spanish New Testament saw the light at Antwerp in 1543, the next at Geneva in 1546, the first Old Testament at Ferrara in 1553, the first whole Bible in Spanish (Reyna's) at Basel in 1569 (revised at Amsterdam, 1602)— books proscribed in Spain. At length, in 1790, the Roman Catholic Miguel published at Valencia the popular Spanish Bible adopted in 1828 by the British and Foreign Bible Society. Similarly, in 1681, J. R. d'Almeida dared to publish in Portuguese the New Testament and in 1712–19 the Mosaic and Historical Books of the Old Testament — at Amsterdam. At last, in 1778, A. P. Figueiredo printed the Bible for the first time in Portugal (Lisbon),— a version since adopted by the British and Foreign Bible Society.

The Irish New Testament dates from 1595, the Old Testament from 1685; most recent is O'Kane's New Testament (1858). In Gælic, the New Testament was issued in 1690, the Bible in 1783–1801, and revised in 1826, 1860, 1880. In Cymric, the New Testament appeared in 1567, the Bible in 1568. The Manx version dates from 1770–72. A Breton New Testament appeared in 1827, another in 1847, and the Bible in 1860.

Immediately upon the appearance of Luther's work the centre of interest in translations was shifted to the English, though not to England, for Willyam Tyndale finding "no place in all Englonde" to ply his task, such was the conservatism of the island, retired to Germany, where under Luther's shadow he printed the New Testament in English (3,000 copies, oct., at Worms 1525), though stopped at Cologne by Johann Cochlæus. In 1530 appeared his Pentateuch, in 1531 his Jonah. In his Belgian prison he begged for a Hebrew Bible, grammar and lexicon, along with warmer clothing, and held out true to the end (6 Oct. 1536), when he was strangled and burned, the pre-eminent hero of Bible translation. His noble work, though often faulty, remains the unshaken basis of all subsequent English versions, 80 per cent of his Old Testament and 90 per cent of his New Testament being retained in the Authorized Version. France, Spain, Italy, Holland, Bohemia all had their vernacular Bibles before 1509, and Germany hers printed in 1466, reprinted 17 times before Luther. But Tyndale's New Testament was the first part of an English Bible in print (1525), and the first English Bible printing was done in England in 1538. In 1535–36 appeared the first complete printed English Bible, based not on originals but "out of Douche and Latyn," with the help of "five interpreters" (doubtless Luther, Zürich Bible, Vulgate, Pagninus, Tyndale), by the Augustinian friar Michael Coverdale, undertaken at the bidding of Thomas Cromwell and dedicated to Henry VIII. Coverdale was not made of such stuff as Tyndale, but his work contributed to the fineness and felicity of the English. Under the pen-name of "Thomas Matthews" in 1537 John Rogers, who was to Tyndale what Purvey was to Wyclif, published the "Matthew's Bible," being Tyndale's work published and unpublished, supplemented by Coverdale's, annotated by Rogers, for all of which he "broke the ice valiantly" at the Smithfield stake, 4 Feb. 1555. The book appeared and was sold on Cranmer's petition, through Cromwell's influence, by Henry's authority. Revision followed revision; one by Coverdale, exploiting Münster's Latin version (1534–35), was called the *Great Bible*, or the *Chained Bible*, was introduced into every church, and often chained. Public interest was intense and the clergy complained bitterly that even at divine service the people would read English Scriptures rather than hear English sermons. This *Great Folio*, begun in Paris, "Fynisshed in Apryl 11, Anno M.CCCCC.XXXIX," shows Henry on the title page, giving the 'Word of God' to Cranmer and Cromwell, to give to the rest. The second of seven editions (1539–41) in 1540, called *Cranmer's Bible*, from Cranmer's long preface, contains the addition "This is the Byble apoynted to the use of the Churches," since then for nearly four centuries familiar. After 1546 this was the only Bible allowed. Tyndale's was forbidden in 1543, no notes were allowed, and "no woman (unless she be a noble or gentlewoman), no artificers, journeymen, servingmen, under

the degree of yeomen . . . husbandmen or labourers should read or use any part of the Bible under pain of fines and imprisonment.»

Fleeing from the flames that broke forth under Mary, the Puritan Reformers gathered with John Knox at Geneva, home of Calvin and Beza, and there headed by Whittingham, revised the Great Bible into the more literal Geneva or Breeches Bible (so-called from its adopting Wyclif's rendering of *chagoroth* in Gen. iii, by *breeches* instead of *aprons* or *girdles*). Annotated, divided into verses (for the first time in English), and convenient in size, this Bible from the start (1557–60) won the hearts of the people, reaching 160 editions in 50 years. But as Genevan it could never please the bishops, who under the lead of the learned Archbishop Parker tried to displace it with their (eight) «Bishops' Bible» (1562–68), but failed for lack of unison, too many cooks spoiling the broth.

After such manifold preparation the time was ripe for the Revision of 1611, first suggested to King James by the Puritan Dr. John Reynolds in conference (Hampton Court, January 1604), on «things pretended to be amiss in the church.» Working under instructions from James to follow the Bishops' Bible wherever possible, to retain old ecclesiastic terms, to reject marginal notes except in explanation of the Greek or Hebrew*, to translate severally and afterward compare—and translating in six groups, two at Westminster, Oxford and Cambridge each, 47 in all, with «three or four of the most ancient and grave divines» in consultation, they completed the whole work in 33 months, revised it in nine additional, and in 1611 gave it to the world fulsomely dedicated to the King, and with a remarkable preface by Miles Smith.

As may be inferred, its critical authority is feeble, but its literary charm and its emotional appeal are irresistible; its hallowed rhythm still entrances the heart that no longer understands. In general faithful to the sense, to the form, and even to the color of the original, in its idiomatic flavor it sets up a standard of excellence in English style that the modern reader regards with delight tempered with despair.

To perfect a work of such unrivalled mastery by the «great helps» of incomparably superior knowledge, and enlarged and corrected historical perspective, is a difficult though not an impossible task. But for many years the restless progress of thought and study along the whole circuit of biblical inquiry had made it evident that this Authorized Version (so-called though never publicly sanctioned by King or Convocation or Privy Council or Parliament) could no longer in reason be held authoritative. Not a few private attempts were made to provide translations at first of particular books, afterward of the whole Bible, more fitted to meet at once the more exacting critical demands and the altered literary feeling of the age; but of course all such were predoomed to failure, though some were not lacking in merit. At length, at instance of the Convocation of Canterbury, February 1870, a thorough revision of the Authorized Version was undertaken and carried to completion in 1885 (though the Apocrypha did not appear till 10 years later). The revisers worked in four groups, two in England (on the Old Testament, appointed nine, invited 18; on the New Testament, apointed six, invited 22), two (advisory) in America (the second in each dealing with the Apocrypha), including such masters as Cheyne, Davidson, Driver, Field, Ginsburg, Sayce and the two Smiths (R. P. and W. R.). On the New Testament their meetings were 407 up to May 1881; on the Old Testament 792 up to 20 June 1884; every verse was minutely discussed and the whole submitted to three revisions. A delicate and dangerous undertaking! No wonder that four of the invited declined, and that 10 died before its completion. The result, not seldom disappointing, has not passed unchallenged but has been subjected to a severe crossfire of criticism, in large measure intemperate and unjust. A complete reconciliation of older æsthetic with newer critical claims has not indeed been effected, but undoubted progress was made, and the enormous labor was far from thrown away. The Revised Version is steadily forcing its way to general recognition, though it has by no means displaced its predecessor. The American advisers were much more pliant to critical pressure than their English brethren, and the Standard American edition (1901) embodies many changes unaccepted by the latter.

Nevertheless, even this latest revision is far from final. While the conservatism of accepting the received Hebrew text should not be condemned, it seems certain that a thorough revision of that text is demanded no less imperiously than of the English translation. To be sure, the task is one of extreme difficulty, for which the time is not full, and generations or even centuries may wait on its fulfillment; a wholly satisfactory result may be attainable only by altering profoundly the statement of the problem; but a very notable advance is even now practicable at many points. Similar but less serious and significant was the Lutheran revision projected at the Eisenach Church Conference (1861–63). The result ('Probebibel') tentatively printed in 1883, finally revised at the Halle Conference (1890), published in 1891 and circulated by the Würtemberg Bible Society, was welcomed rather coolly in North Germany. Meantime independent scholarship has been brave and unwearied in work. Foremost stands the noble translation of the Old Testament (with notes) by Ed. Reuss (in French 1874–81, in German 1892–94) followed and in minute scholarship surpassed by that of Emil Kautzsch and his fellows (1890–94, 3d ed. 1909–12), and the parallel Dutch work of Hooykaas, Kosters and Oort (1894–1901), both from carefully revised Hebrew texts. The valuable Variorum of Cheyne and Driver (1876–88) contents itself with appending to the Authorized Version suggested variations in text and translation, nor does it present the later and more learned views of these scholars. Noteworthy and admirable is the German New Testament of Carl Weizsäcker (1822–99), which, begun in 1874, reached the ninth edition in 1906. The learned new translation of the New Testament by James Moffatt (1913), from von Soden's text, is valuable for its clear recognition in print of the metrical character of

* The number of such exceptions, 7,000 in 1611, has since then been much enlarged, and the marginal references have swollen from 9,000 to 60,000.

large portions of nearly all the documents; the form of the Scripture is hardly less important than the substance.

A labor of Hercules is the Polychrome or Rainbow Bible ("Regenbogenbibel") of Paul Haupt and his company, which would visualize the composite character of the Old Testament by printing "older incorporated documents or later sections . . . on back grounds of different colors," both text and translation. The spectral effect is very striking, and some way of distinguishing the sources in type seems desirable, and various devices have been employed. However, though the composite structure is beyond serious dispute, the complete disintegration and just distribution of components are still very far from perfect, the most plausible color-scheme is at best provisional. But Haupt's S. B. O. T. (Sacred Books of the Old Testament) is a monument of erudition, invaluable to the student.

Attempts to modernize the Bible into journalese, to make the ancient — whether historian, legendist or mythopoet, whether moralist or parabolist, whether prophet or apostle — speak the language of the street, not to say the gutter — all such attempts are so ill-advised and proceed from conceptions gone so far astray that they may be passed by in silence.

Examples of translations named from certain peculiarities have already met us; such too is the *Douai*, reading at Jer. viii, 22 "Is there no rosin in Galaad?" and thence called the "Rosin Bible." The tale of such may be found in the great dictionaries. Often the translator stands before the alternative of being understood amiss or not at all. "The Father of lights, with whom there is no variableness, neither shadow of turning" (Jas. i, 17). The reader is content to think of "the least bit of turning!" The American revision gives "variation" and "shadow that is cast by turning," which bewilders the reader, who still finds no hint of astronomical "parallax" and "eclipse." Again, he seems to understand the Authorized "course of nature," but hardly the Revised "wheel of nature" or "birth," for he is not prepared for Orphism in Jas. iii, 6. The false notion that the Bible, at least the New Testament, is crude and artless, the naïve record of simple and unlearned men, gives rise to endless misunderstanding.

In modern times the original motive of Christianity, the "conversion" of the world of polytheists and idolaters to Monotheism, the worship of the One God, has reasserted itself in a consuming missionary zeal, which has expressed itself in a determined effort to bring the Word, as the power of salvation, to the mind and heart of all men, by translations into every tongue under heaven, so that modern evangelicism reminds one of the angel bearing the "Eternal Gospel," "Fear God and Give Him Glory" (Rev. xiv, 7). Far in the van is the British and Foreign Bible Society (founded 1804) credited with translations into over 450 tongues, followed by the American Bible Society (1808, 1816) with a credit of over 150 tongues. Of course, there is here no question of critical accuracy or correct comprehension, but rather of difficult adaptation, as when "Lamb" becomes "Little Seal" in Eskimo, but these devoted labors have at least borne notable philologic fruit.



In glancing back over this immense range of translations we behold three towering apart, above and beyond all others: the Greek (Septuagint), the Latin (Vulgate), and the English (Authorized). Of these, the chief in importance is the Greek, since it conditioned the appearance and triumph of Christianity; next is the Vulgate, the authoritative voice of the Roman Church to so many millions for so many years; last in importance though first in literary excellence is the English, which now perhaps speaks to a larger audience than any other, than even the Vulgate itself. Next in eminence is the German (Lutheran), and far below it next the Syriac *Peshitta*. Of all five the German bears most distinctly the stamp of the individual spirit, and in much less measure the Latin, whereas the Greek is a growth of centuries, and the English the issue of a collective effort consummating the long-drawn labors of nearly nine generations. The common consciousness has passed into the Three Chief Translations and therein found expression; and in spite of errors which the following years will constantly detect and expose in number, these versions will scarcely be surpassed by any future rivals. The corrosion of time may wear down these mountain summits, but it is very unlikely that the energies of the national spirit will ever upheave any others to such solemn and commanding heights.

For bibliography see article BIBLE.

WILLIAM BENJAMIN SMITH.

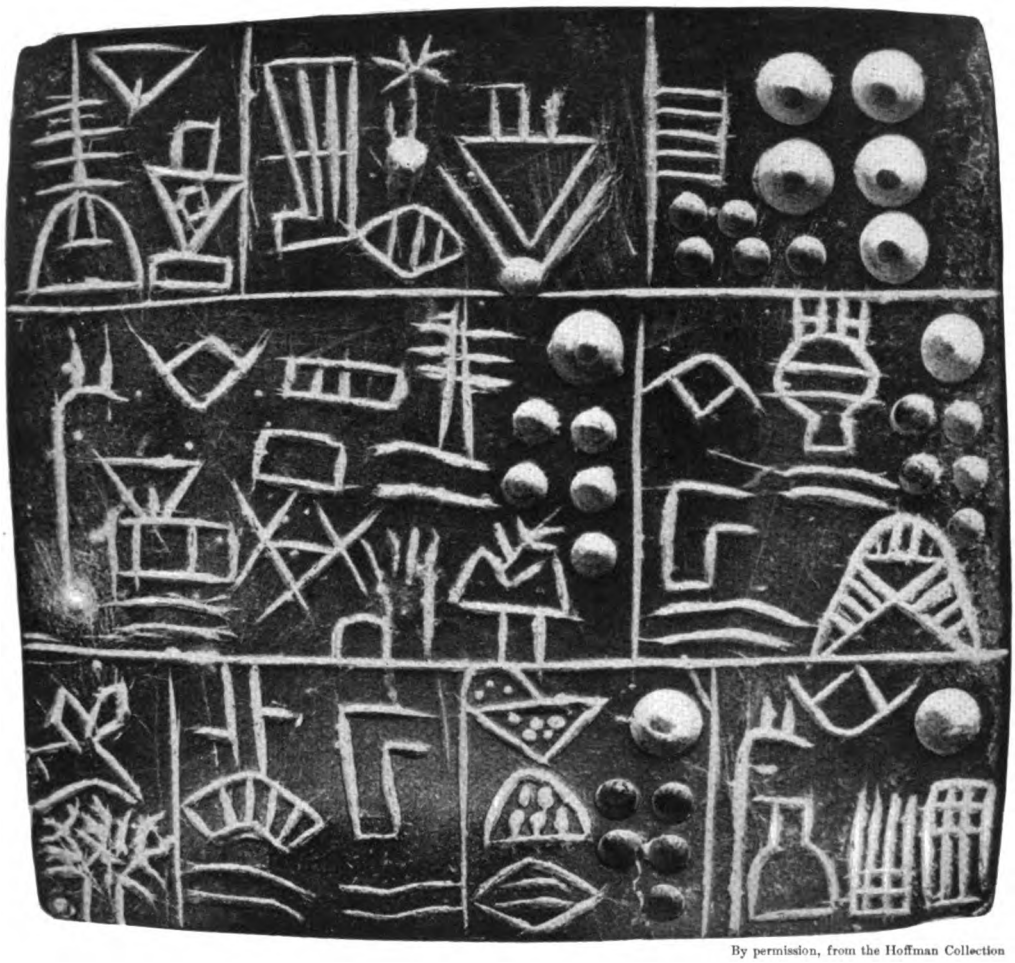
**BIBLICAL ARCHÆOLOGY. Old Testament.**— Archæology is literally "account of the old," but it has become limited in application, first, to the old in relation to man, thereby distinguished from geology and palæontology, and secondly, to man as a creator of civilization, thereby distinguished from palæology and palæethnology. As an account of ancient civilization, archæology itself divides into antiquarianism, dealing with antiquities, the mere physical products and agents of ancient civilized life, such as houses, temples, tombs, tools, arms, household articles and the like, and other artifacts, and epigraphy, which deals with the written legacies of ancient peoples, such as inscriptions on stone, brick, papyrus, pottery, vellum, parchment. The former makes appeal to our artistic nature, but the documents are laden with far richer and more definite information and historic content. Biblical archæology draws upon both for the illumination of the Scriptures, but in far larger measure upon the second.

The history of the Holy Land, and therewith the peculiar significance of the people Israel with its literature and religion, were decidedly conditioned, though not determined, by the geographic singularity of its lying on the high-road of nations, midway between the two cradles of civilization, Egypt and Mesopotamia, the ever-growing deposits of the Nile and of the Twin Rivers. The independent civilizations of these valleys reach back in high development to remote epochs, being definitely certified in Egypt 4240 B.C. (beginning of the first Sothic Cycle, of 1460 (i.e., 4x365) years, circuit of New Year's day through the year), and the Nippur tablets carry back the Mesopotamian perhaps still further. Between these two lay Canaan, for millenniums apparently little in-

fluenced by either, but gradually drawn into the widening vortex of their ambition and empire. The earliest Hebrew tradition recognized this double dependence, reaching out one hand to the Nile, and the other to the Euphrates. According to Gen. xi, 27, xii, 4, Abram hailed from Chaldean Uz, or Haran, whence he went into Canaan at the hest of Yahveh. Again it is to Paddan-Aram (Gen xxviii, 2) that Isaac sends Jacob to get him a wife among his own clansmen. Such early contact of East and West is not unlikely, since the inscriptions attest that Lugalzaggisi, King at Erech of all Babylonia about 2800 B.C., extended his sway from the Persian Gulf to the Western Sea, and his successor, the great Sargon, is even said to have crossed it. But again, even Abram is brought into close relations with Egypt: he goes thither in time of famine (Gen. xii, 10), dwells there, departs thence, and his concubine, Sarah's maid Hagar, is an Egyptian. Much more, however, the most outstanding facts in the racial consciousness would seem to be the descent of Jacob and his family into Egypt, the sojourn and persecution there, above all their deliverance through the high hand and outstretched arm of Yahveh, followed by the legislation at Sinai and the wandering in the desert. It would appear then that Egypt bulked far larger than Mesopotamia in the national imagination, but this does not quite prove that the ties of blood and history were really stronger. Indeed, as already observed, it is not certain that Egypt is always meant by the *M-ṣ-r-m* of the Hebrew text, and critics of the highest eminence suspect a confusion of geographic names at the base of the whole Egyptian story.

When now we ask about the witness of archæology to these Biblical statements, which undoubtedly represent the popular Hebrew consciousness, the answer is somewhat disappointing. Palestine is geologically a huge fault in the earth-crust, the western strata having slipped down nearly a mile and become extremely crumpled in the dislocation. Hence has resulted its extraordinary variety of surface, climate and production,* well matched by a long and highly varied racial history gradually coming to light from the mounds that dot it and the caves that afford glimpses of man 10,000 years ago. Since as early as A.D. 333, the Holy Land has been a goal of pious pilgrimage and loving inquiry and exploration. A little later the learned Eusebius composed (and the still more learned Jerome turned into Latin) the 'Onomasticon,' a careful list of the places in Palestine that are named in the Bible, identifying as many as possible and adding data concerning distances and events. His general method, though not his alphabetic order, has been followed by many travelers and culminated (1841, 1856) in the capital 'Biblical Researches' of Edward Robinson, professor in Union Theological Seminary, who explored the Holy Land in 1838 and 1852, armed with "no instruments, except an ordinary surveyor's and two pocket compasses, a thermometer, telescopes, and measuring tapes"— not with spade; it was Renan (1860) who suggested but only feebly exemplified the supreme value of this latter. About the same time (1848) the depression of the Dead Sea, first recognized in 1837, was determined by another American, Lieut. W. A. Lynch of the navy, as nearly a quarter-mile below the Mediterranean. Religious zeal soon began to organize itself for minute study of Palestinian topography, in the Palestine Exploration Fund (London 1865) followed by the American Exploration Society (1870), and American Palestine Exploration Society (October 1870),— one main object of whose efforts was attained in the publication (1880) of a consummate map of Palestine. The Germans followed with their "Palestine Society" (Deutcher Palästina-Verein, 1877) and its important journal (*Zeitschrift*). Renan's suggestion was followed after nine years by Warren in excavating on the Temple Hill, Jerusalem, and laying bare the famous "Robinson's arch"; but not till 1890 did the scientific use of the spade begin in Palestine, at Tell el-Hesy (the ancient Lachish), under direction and often under the hands of the renowned William M. Flinders Petrie, in service of the Palestine Exploration Fund. His practiced eye recognized the potsherds exposed by the corrosion of an intermittent stream on the side of the 120 feet high mound as indicating the ruins of by-gone ages, and his excavations published in 1891, continued in 1892 by Dr. F. J. Bliss, revealed city upon city, eight in number, the oldest founded about 1700 B.C., all stratified by the mounting and falling waves of history during nearly 1,400 years. Since then mound after mound has been dug up and sifted, as at Tell es-Safi (Gath?), by Bliss (1901) and especially at Tell el-Jazar (Gezer, according to Clermont-Ganneau) by R. A. S. Macalister, which he found had been inhabited from 3000 to 2500 B.C. by non-Semitic cave-dwellers of the Stone Age, not taller than five and one-half feet, and afterward by Semites (Amorites?) till the fall of the Hebrew state (586), and also four centuries afterward, in Seleucid times. Of all Palestinian mounds this has been most extensively examined (about half of it, 1902–05, 1907–09) and has yielded the longest and fullest record of history. A tunnel cut through the rock 94 feet deep to a cave-well, now 120 feet below the surface, gives some idea of the energy and ability of the men of 3,700 years ago, while the "high place" with its monolithic pillars, from five and one-half to nearly 11 feet high, its votive plaques of Ashtoreth, and its charnel-house of new-born babes, many in jars sacrificed as first-born to the worshipped god, throws a lurid light upon the Palestinian-Phœnician religion. At Tell el-Mutesellim (Megiddo), the Germans under Schumacher have disinterred (1903–05) a stone-built city of 40 centuries past, and below it mud structures of still earlier date, surmounted by strata on strata, all pre-Christian, to the number of seven. At Tell Taanek (Taannach) Professor Sellin in 1902–03 reached a stratum that he dates from 2500 B.C. At Jericho also he found a jar handle whose scarab stamp indicates the 12th Egyptian dynasty, about 2000 B.C. The tale of such exhumations stretches out almost indefinitely. Most recently (1905) the Germans

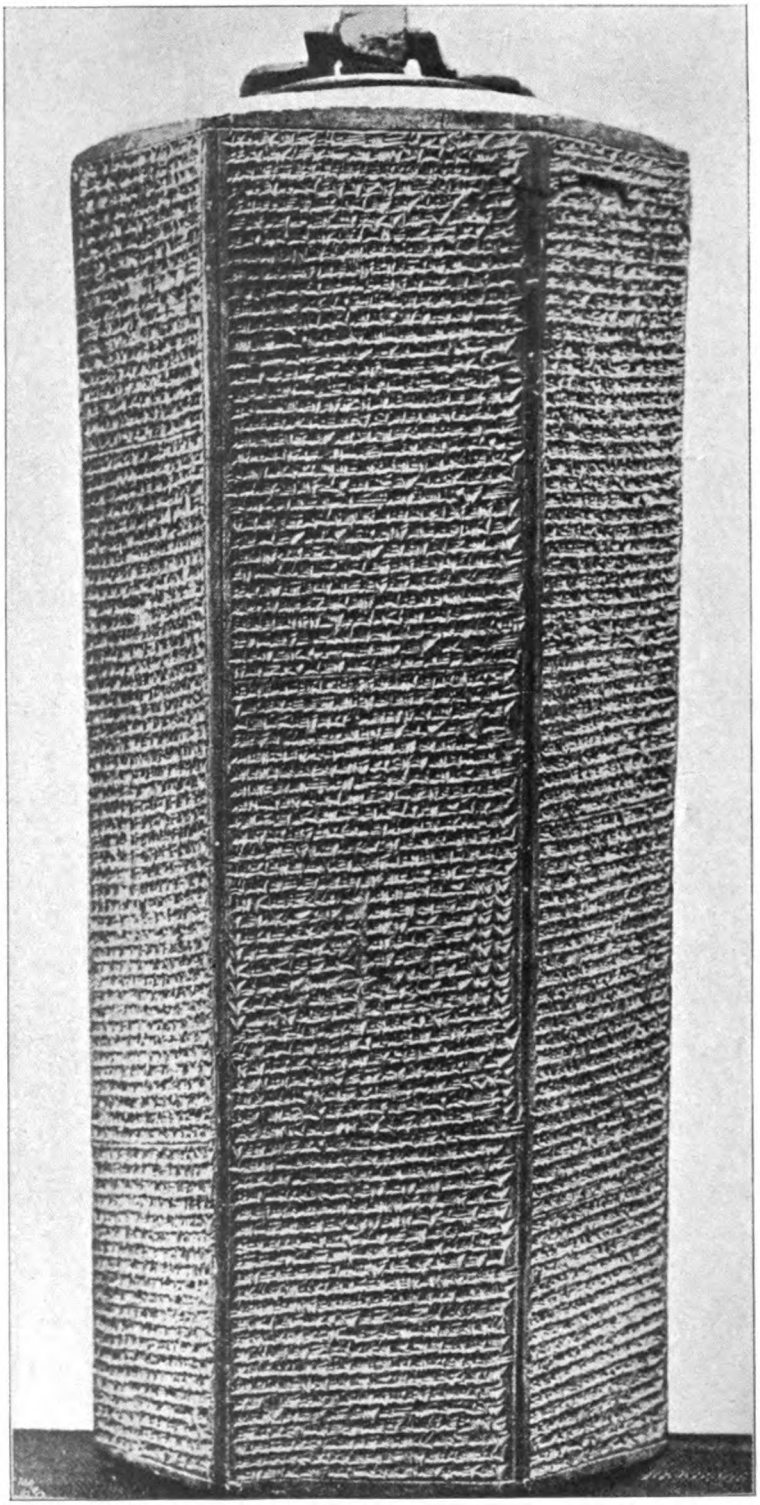
* That the Biblical praise of Palestine is not exaggerated appears from the account of Sinuhe, a high-placed Egyptian, who fled thither about 1970: "It was a goodly land named Yaa (Ajah? Gen. xxvi, 24, 1 Chr. i, 40); Figs were in it and vines, More abundant than water its wine, Copious its honey, plenteous its oil: All fruits were upon its trees: Barley was there and spelt, All cattle without end."



By permission, from the Hoffman Collection

THE BLACK ARCHAIC BABYLONIAN TABLET

One of the earliest known inscriptions, thought to be at least 7000 years old. As tentatively deciphered by Prof. G. A. Barton, it defines the boundaries of a "field of clay" "belonging to the priest of Sallaltur."



**1st, 2d, 3d COLUMNS OF SENNACHERIB'S HEXAGONAL PRISM**
**The middle column tells of his cooping up Hezekiah as in a cage. In the British Museum. From Bezold**

have uncovered at Tell Hum (Capernaum) a synagogue of the 4th century A.D., and below it the floor of an older structure which some fancy may be mentioned in Luke vii, 5. H. Clay Trumbull, followed by C. M. Cobern and many others, has thought to identify the Kadesh-Barnea of Numbers xxxii, 8, with the present *Ain Kades*, which Woolley and Lawrence hotly contest in the interest of *Kossima* ('The Wilderness of Zin,' 1912). Also the Assumptionist Fathers of Notre Dame de France have uncovered streets on the western hill sloping east, south of the present city wall of Jerusalem, and think they have found the house of Caiaphas (John xviii, 24; Matt. xxvi, 3).

It is seen that the spade has made wonderful revelations, widening immensely the horizon of Palestinian history, but has dug up little of direct bearing on the Bible, beyond a long array of *objets d'art* too numerous to mention or even classify. Civilization after civilization, often of no mean order, is revealed surging over Canaan, the Hebrew monarchy (1000–586) appearing only as a comparatively brief interlude in the grand drama of history. The Hebrews themselves seem to be of dubious antecedents and connections, and we are startled at recalling the repeated charge of Ezekiel (against Jerusalem): "Thy birth and thy nativity is of the land of the Canaanite; the Amorite was thy father, and thy mother was a Hittite" (xvi, 3, 45). The Amorite has long been known as the elder inhabitant of the land, and the Hittite emerges slowly from the mists of antiquity as a composite race wide-scattered from the Ægean to the Tigris, from the Euxine to the Jordan. The conquest of Canaan looks like the work of centuries and of widely separated but related tribes invading at various times from different and distinct quarters and with varying and uncertain success. Coming to closer quarters, we ask what does archæology tell us of Bible history and worthies, and first of Abraham? On a tablet dating from 1965 B.C. it is written that "Abarama, son of Awel-Ishtar, For one month has hired . . . One ox broken to the yoke." Again "Concerning the 400 shares of land, the field of Sin-idinam, Which to Abamrama To lease, thou hast sent . . . ." Again "One shekel of silver Of the rent of his field . . . brought Abamrama" . . . These tablets and two others in which Abamrama is mentioned as owning a field come from Dilbat opposite Babylon on the Euphrates midway between Ur and Haran. Whence it appears that the name is genuinely Babylonian, and the region agrees with the Bible text, but there is no suggestion of identity between this humble tenant-peasant and the patriarch in Genesis. Over a thousand years later Sheshonk (Shishak) speaks of a place, "The field of Abram" (near Hebron?), but this does not enlighten us. Still another tablet, of the Hammurapi era, records the lease of a wagon for a year, declaring "Unto the land of Kittim He shall not drive it," which bears unneeded witness to the intercourse between Mesopotamia and the western coast. A far more important historical relation has appeared to some in Gen. xiv, the account of the triumphant foray of Abram, dwelling by the terebinths of Mamre, with 318 trained men of his household, against the four eastern kings already victorious over the five kings of Pentapolis. Schrader, followed by many, identified "Amraphel King of Shinar" with "Hammurapi King of Sunset" (Mar-tu), through a supposed corruption, *Amrapi*. But later scholarship questions or denies outright any such connection. Similarly, the Chedorlaomer of Gen. xiv has been identified with the "King of Elam Kukumal' (read "Kudurlakhmal'* by Sayce and others, in the cuneiform inscription). But the reading is unwarranted and fails to identify. Again, the same Chedorlaomer has been sought but not found in "Kudur-Mabug, 'Father' of Sunset" (Mar-tu) in another wedge-writing, where "Sunset" or "Westland" means not Palestine but Babylonia. Other imaginative identifications are "Arioch, King of Ellasar,' with Arad-Malkua (read as Sumerian, Eri-eaku), and "Tidal, king of nations," with "Tudkhula, son of Gazza." But the tablets of the 4th century celebrate Babylon's overthrow by Elam, Kukumal's conquest of Hammurapi's capital! They doubtless deal with centuries after Abraham. But even if the identifications were complete, it would only discredit Genesis; for that Abraham with 318 household servants should attack and discomfit the victorious armies of the four kings and "return from the slaughter of Chedorlaomer" is too heavy a tax upon our faith. If the whole account be not in some way symbolic, but semi-historic, the facts in the case are too deeply disguised for recognition.

When we turn to the West and ask concerning the early Egyptian connections of Israel, the gleaning is scanty. "Sargon the mighty king, king of Agade" tells of his exposure "in a basket of reeds" and of his rescue by "Akki, waterman." There need be no copying of this in the account of Moses, but rather independent elaboration of a favorite motif; the Freudians, of course, understand it all as a part of the dream-myth of the hero-birth, the basket as the womb, and etc. Hitherto, King Merenptah (1225–15) has enjoyed the ill-fame of being the Pharaoh of the Exodus; but in 1896 Petrie discovered a stele inscribed with his pæan of triumph in which, proclaiming his victory over Lybians, Hittites, Canaan, Phœnicia, he adds: "Ytzrael is wasted, his seed (fruit, crops?) is not." Yet it is uncertain, from the absence of the "determinative," whether a settled people be meant. In any case, the implication that Israel had been overthrown in Palestine is puzzling and seems to call for revision of previous ideas. Hardly less bewildering is the frequent reference in the Tell el-Amarna letters† (to Amenophis III and IV, from the vassal King of Jerusalem, Abdi-Hipa) to the inroads of Habiri, who seem to be Hebrews, nearly 150 years before the supposed Exodus. The implication seems to be that the Hebrew invasion was a century-long process with no apparent outset from Egypt — a view not antecedently improbable. Of nearly the same date is a letter exhumed by Sellin at Tell el-Taaneh (1903) and containing the proper name Ahi-ya-mi, apparently the Babylonian for the Hebrew Ahijah or Ahi-Yahveh, attesting (as Barton thinks) the knowledge of the Holy

*Or Kudur-laghghamar.

†Four hundred clay tablets in Babylonian, discovered (1887–88) on the site of the new capital of Amenophis IV,— it is said, by an Egyptian woman, accidentally, and sold for two shillings!

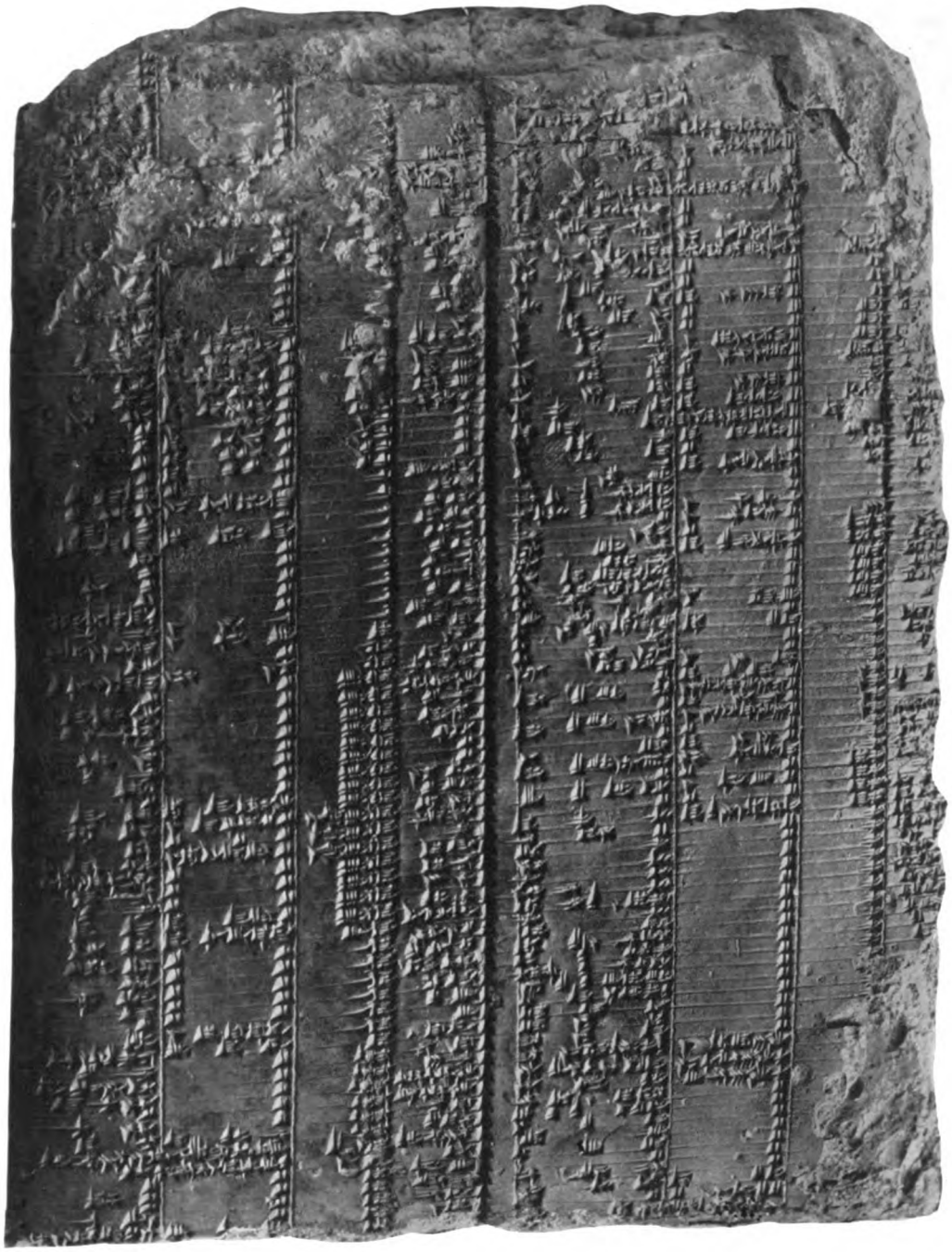
Name Yahveh at the early period in Canaan.

Of somewhat similar purport is the discovery of the name "Yakub-ilu" (in Hebrew, Jacob-el) of three men in Babylonia as early as 2161–44. Under Hammurapi, a fourth gave his father's name as Yakub, the first antedating "Abarama" by 190, the last by 75 years. Seven hundred years later (1478–46) Thothmes III records the conquest in Palestine of a city Jacob-el (in Egyptian *Ja-'k-b'-ra*), which combined with the biblical history of Jacob suggests the partial derivation of the Chosen People in Palestine from immigrants from the North East. Similar conjecture is suggested by the similar presence in a Babylonian document (c. 2200) of the name Yashub-ilu (Joseph-el), along with the city name Ya-sha-p'-ra (Joseph(?)-el) in Thothmes' list. The Bible account seems to point toward a powerful more or less independent Josephine element in the Chosen Race. The touching story of Joseph and his temptation is remarkably paralleled in the Egyptian 'Tale of the Two Brothers' (written for the crown-prince, afterward Seti II, 1209–05), as well as in the case of Bellerophon and Anteia (Il. vi, 160ff) and elsewhere; but again it does not seem to be borrowing, but rather independent exploiting of an obvious and favorite motif. Among the El-Amarna Letters are two of the Amorite vassal, Aziru, to Dûdu (Hebrew, David), a Semite, apparently all-powerful favorite of the King Amenophis. Again, an inscription published by Brugsch (1891), dating from Ptolemy X (117–89), tells how King Zoser (2980) prayed to Khnum, god of Yeb, in time of famine, caused by the Nile's failure to overflow for seven years, while another inscription of Baba (1500) tells how he prepared his city of El-Kab against such a famine, distributed corn, etc., much as we read of Joseph. Whence it appears that the historical background upon which the pleasing picture in Genesis is painted is sufficiently justified and exact.

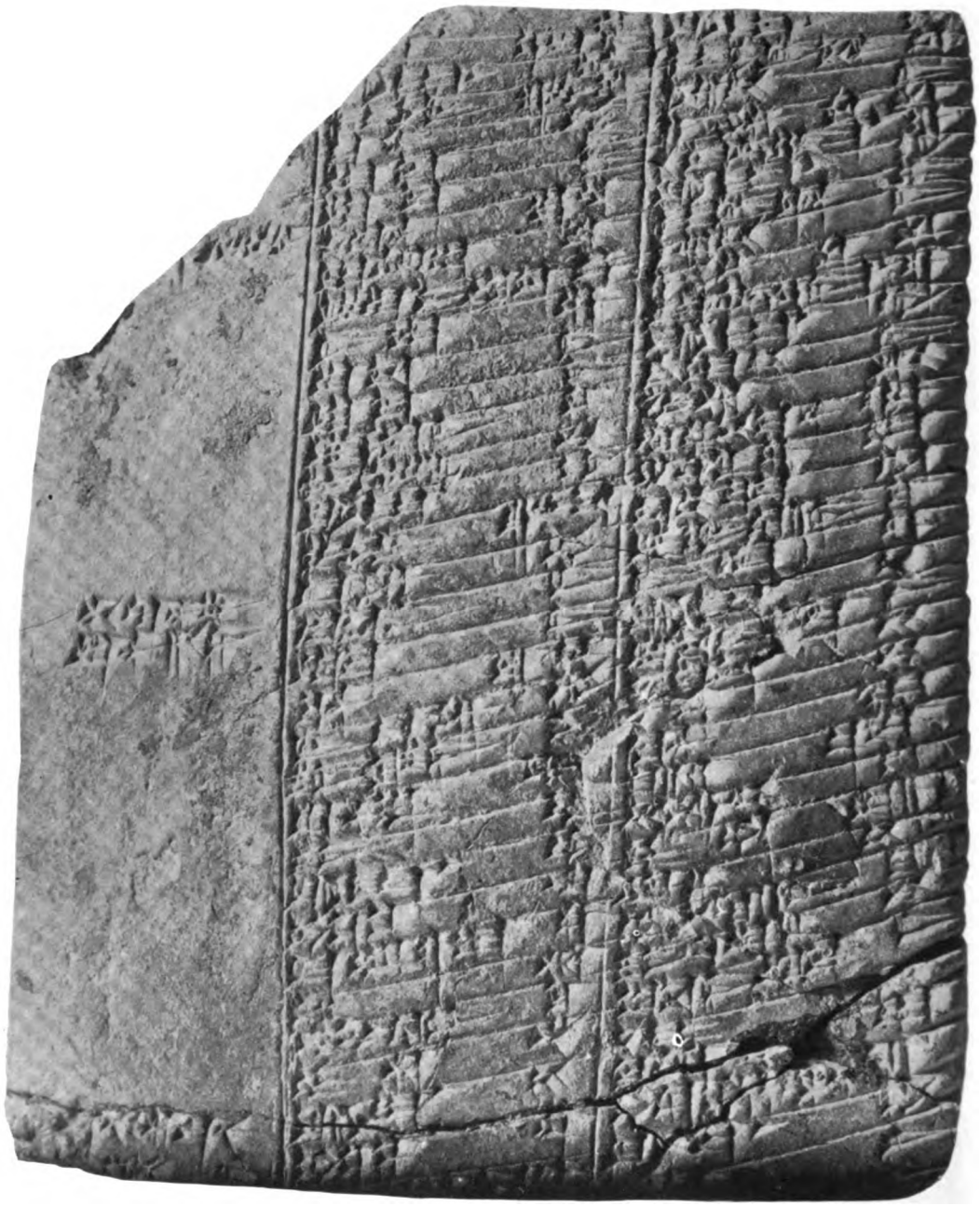
If the illumination shed by archæology on the times of the patriarchs and the Exodus is faint, scattered and uncertain, the light cast on the period of the Judges is almost "darkness visible." Only a remarkable report of one Wen-Amon, sent from Egypt to procure logs from Lebanon "for the great and august barge of Amon-Re," might do honor to a modern consul or special envoy and sets forth in lively hues the difficulties and dangers of primitive commerce; but beyond confirming the repute of Lebanon, attesting the disorganization of the maritime Palestinian dependencies of Egypt, and presenting a parallel to "Saul also among the prophets" in a noble youth whom "the god seized and cast into frenzy," this admirable state paper offers no points of contact with the contemporary Israel of Gideon and Deborah. The fame of the Lebanon cedars far antedates these Judges. Nearly 2500 years B.C. Gudea, the noted ruler of the Babylonian Lagash, in restoring the temple of Ningirsu, "brought from Amanus, mountain of cedar, cedar wood whereof the length was 60 cubits," as well as "great cut stones from Umanu . . . mountain of Amorites." Such was the enterprise of the ancients! Not till after the establishment of the monarchy does the Hebrew step forth clearly into the light of profane history. Sheshonk I (954–924), the Shishak of I Kings xiv, 25, having plundered Jerusalem in the fifth year of Rehoboam, pictured his victory on the walls of his pylon at the Karnak temple, affixing a list of conquered towns, 120 still legible, indicating conquests of both Southern and Northern kingdoms, even beyond Jordan. Ashurnasirpal (884–860) boasts, "In the great sea I washed my weapons," but seems to have passed by Canaan. But his son, Shalmeneser III (860–825) claims, perhaps with exaggeration, to have vanquished (854) an extensive alliance including "2,000 chariots, 10,000 men of Ahab, the Israelite" and "1,200 chariots, 1,200 horsemen, 20,000 men of Hadad-Idri" (Benhadad, in 1 Kings the determined foe of Ahab). This king has chronicled many campaigns and set up a black obelisk depicting "Jehu son of Omri," of whom be "received tribute," bowed and kneeling before him. Scripture is silent concerning those exploits. Again, Adad-nirari (810–782), unnamed in the Bible, boasts of having "conquered . . . the land of Omri . . . to the coasts of the great sea." The warlike Tiglath-pileser IV, whose inscriptions were sadly marred by Esarhaddon, vaunts a victory over "Azariah the Yaudean," "of Yaudi" (738), but this was perhaps Azariah of Yadi in North Syria, named again in Sargon's inscription of 717; the Assyrian conqueror is the Pul to whom Menahem of Israel "gave a thousand talents of silver" as tribute, the price of his throne. Six years later, Pul swept again in full triumph over the west, Judah being saved only by the tribute by (Jeho) Ahaz (2 Kings xvi, 7–10), presented in person at Damascus. The mutilated inscription declares "The country of the house of Omri . . . all its people . . . I carried away unto Assyria. Pekah their king they had overthrown. Hoshea . . . over them I placed. 10 talents of gold . . . talents of silver I received as tribute from them." This greatly overlaps the statement of 2 Kings xv, 29. Hoshea rebelled, and Shalmeneser V (727–22) besieged him in Samaria but did not live till his capture, recorded by Sargon (721–706) for "my first year,"— "27,290 people from its midst I carried captive," which accords reasonably well with 2 Kings xvii, 1–6.

The deportation was small, even when augmented by that of Pul, far less than has occurred in recent cultured times. It was rather by absorption at home that the "ten tribes were lost."* For ages this Sargon was known from Is. xx, 1 as conqueror of Ashdod (711). His name was next discovered when Botta exhumed his palace in 1845. It is Sennacherib (706–681) that bulks largest in Judah's history. His inscription relating to his campaign of 701 tells of his delivering Ekron's king "Padi my ally" from "Hezekiah, the Judæan," — to whom his people "had delivered him" in "fetters of iron," — "out of the midst of Jerusalem"; that he captured "46 of his (Hezekiah's) strongholds," "200,150 people, . . . I brought out of their midst" with countless "booty." "Himself I shut

*Tablets in the British and Berlin Museums, dated 666 to 606 and concerning the sale of slaves, give a number of names with the divine prefix *a-u*, as Au-eabi, A-u-shezib, etc. This *A-u* would be Assyrian for the Hebrew Yo, or Yeho, or Yahu, the combining form of Yahveh in the Old Testament. Thus *A-u-iddina* would be for *Jo-nathan* (Yahveh gives). Hence it is thought these tablets afford us a glimpse of the "lost tribes"— engaged in the transfer of human chattels.



A Sumerian-Babylonian Dictionary, Two Sections of Four Columns Each (Ca. 3000 B. C.). The second and third columns contain respectively the character and its name; the first and fourth respectively the Sumerian and Babylonian equivalents.— From the Yale Collection, by courtesy of Professor Albert T. Clay



Babylonian Tablet Inscribed with the Oldest Known Laws (Ca. 4200 B. C.), the supposed basis of the Hammurabi Code.— From the Yale Collection, by courtesy of Professor Albert T. Clay

up like a caged bird in Jerusalem." "Deserted" by "Urbi and his favorite soldiers," Hezekiah "with 30 talents of gold, 800 talents of silver," and endless treasures, "also his daughters, the women of his palace, male and female musicians he sent after me to Nineveh, my capital, and sent his messenger to present the gift and to do homage." From this much-debated inscription it would appear, quite in accord with Is. xxxvi, xxxvii, and 2 Kings xviii, xix, that Jerusalem did not actually fall to the Assyrian, but that he departed to Nineveh, leaving his army behind. However, the extent of Hezekiah's disaster is only vaguely hinted in the Scripture, and no intimation of the angelic slaughter of 185,000 Assyrians is found in the wedge-writing. Some, as Meinhold, would accept this latter, whose minuteness inspires credence, at its face value and regard the Biblical account as confused or garbled; others, as Winckler, refer 2 Kings xix, 9–36, to a second expedition, about 691 (when Tirhakah first ascended the Ethiopian throne), and the inscription to the first expedition only,—though this seems impossible, as the return of Sennacherib to Nineveh (2 Kings xix, 36) is clearly implied in the close of his inscription. This latter however strongly suggests that *something* happened to the Assyrian to call him away, and G. A. Smith, followed by others, in view of a passage in Herodotus (II, 141) telling how Egypt was delivered from Sennacherib's host by field-mice that ate up their quivers, bowstrings and shield-straps "in the night," conjectures that it was the bubonic plague that paralyzed the "might of the Gentile," and became in the Egyptian tradition a "multitude of field-mice," vehicles of the pestilence, but in Hebrew imagination the Angel of Yahveh. In these accounts, then, we "see men as trees walking." An inscription of Esarhaddon (680–669) names "Manassah King of Judea" as second among "22 kings of Hittite lands," whom "I overthrew," confirming 2 Chr. xxxiii, 11, and Ezra iv, 2. Asurbanipal (669–626) also appears in Ezra iv, 10, characteristically disguised as "the great and noble Osnappar." In Is. xxxix, 1, 2 Kings xx, 12, 2 Chr. xxxii, 31, we find Merodach-Baladan sending an embassy to congratulate Hezekiah on recovery from illness; Sennacherib's inscription of 703 tells of the overthrow of the former at Kish; the embassy was doubtless to induce the latter to rebel. The many inscriptions of the highly religious* Nebukadrezar (Nabu-kudurri-uzur, "Nabu, border-mine defend") relate chiefly to his buildings (Dan. iv, 30) and pass by his Judæan conquests.

Inscriptions that merely contain Bible names are too abundant for any specification. The Siloam inscription, which may illustrate 2 Kings xx, 20, has already been mentioned. The celebrated "Stone of Mesha" the King of Moab mentioned in 2 Kings iii, 4, discovered by Klein 1868, and after serious mishap finally lodged in the Louvre, contains a long inscription confirming the subjection of Moab to the house of Omri "for forty years" and its deliverance under Mesha, whose narrative is at best tangent to that in 2 Kings; the two scarcely at all overlap, their viewpoints being wide apart.

It remains to add that the inscriptions show clearly enough that Babylon fell to Cyrus under the usurper Nabuna'idu (not to Darius, as in Dan. v, 31, not under Belshazzar, as in Dan. v, 30), who (and not Nebukadrezzar as in Dan. v, 11–18) was father of Belshazzar. They also make clear how the later Isaiah could speak so knowingly of Cyrus (xliv, 28–xlv, 5). On the other hand, Pinches and Clay have published two tablets which may indicate that Belshazzar was in some way associated with his father Nabuna'id in sovereignty. On the whole, it seems likely that the author of 'Daniel' was too far removed from the situation to write of it with correctness. The famous inscription of Cyrus celebrates how he triumphed as the chosen instrument of Marduk (not of Yahveh, as in Ezra i, 1–4), how he took "Babylon without war or battle," how he established a rule of mercy and justice, how he reversed the stern policy of Tiglath-pileser IV, for two centuries prevalent, and restored the deported to dwell, the people "in their homes," the gods "in their eternal shrines." Such was his general policy, not his special favor toward the Jews. A special decree in favor of the latter (as in Ezra i, 1–4) seems possible but unlikely. Such are the main points of historical contact between the Bible and the inscriptions.

Another important matter is that of *literary resemblance or contrast.* The vast Egyptian and Assyrian literatures continually emerging to light raise this question afresh at each new decipherment. With the first chapters in Genesis one must compare the Seven Tablets of the Babylonian Epic of Creation. Minute treatment is not possible in this connection; suffice it that critics feel sure that there is intimate relation at a number of points, though the discrepancies are far greater and more numerous. Thus, the two accounts agree in assuming a primæval chaos of waters,—in Hebrew *Tehōm,* in Babylonian (Mummu) *Tiâm-at,* cognate terms, like English *morrow* and German *Morgen.* But Genesis is monotheistic, while the epic is polytheistic, and though vivid in its depiction of the god Marduk's struggle and triumph, it by no means approaches the serene sublimity of the fiats of Elohim. Yet the notion of cosmic Creation as a victorious struggle against Chaos had a charm of its own and seems to appear here and there in the Scriptures, as in Job ix, 13–14, where "Rahab's helpers" seem to be "the helpers" of Tiâmat in Tablet IV, 105–18. Also in Ps. lxxxix, 10, and Is. li, 9, Rahab is like Tiâmat. Similarly Job xxvi, 13, seems to recall Marduk's cleaving of Tiâmat (IV, 93–104, 135–140). Once more, the "Leviathan" of Ps. lxxiv, 13, 14, Job iii, 8; xli, 19–21, Is. xxvii, 1, remind us of *Kingu* in the Tablets, the spouse of Tiâmat. Lastly, to the present writer the noble 93d Psalm, especially in verses 3, 4, appears to re-echo and glorify the triumph of the cosmogonic God over the turbulent chaos (of *Tehōm*). In another tablet is found a distant resemblance to the second account of creation in Gen. ii, 4ff, as well as in the great Gilgamesh-epic, where "Aruru laved her hands, Clay she pinched off and spat thereon, Eabani, a hero she created,

* Witness his Inaugural prayer and compare with Solomon's (I Kings viii, 22–61): "Ruler eternal, universal Lord, grant that the name of the king whom thou lovest, whose name thou hast proclaimed, may prosper as pleases thee. Conduct him along the path of righteousness. I am the prince devoted to thee, the creature of thy hand. Me hast thou created, and lordship over men hast committed to me. . . . The fear of thy godhead lay thou in my heart. Vouchsafe me what seemeth good unto thee, for thou art He hath created my life".

Exalted offspring, with Ninib's might." Once more in the myth of Adapa, who "broke the Southwind's wing," critics detect sundry suggestions of the fall of man in Gen. iii. In spite of countless disparities, the atmospheres are alike. Moreover, the antediluvian patriarchs are matched in the long-lived Babylonian kings of the tablets and of Berossos, and even their names have been equated by Barton, extremely interesting results, which cannot be detailed in these columns. Very striking resemblances to the account of the Flood in Genesis are found in the 205 lines of the immense Gilgamesh-epic dating from Babylon, 7th century, but doubtless elaborating far older material. Ut-Napishtim (day-life), or in the Nippurian version, Ziugiddu (life-day prolonged) figures in place of Noah. The essential features of the Bible story all appear in the Babylonian, along with plentiful polytheistic additions: the warning from heaven to the hero alone, the building and pitching of the vessel of safety, the embarkation, the "mighty rainstorm," the ruin it wrought, the cessation when "the sea calmed, the destruction abated, the flood ceased," the settling on the mount (Nizir), the sending forth and return of dove and swallow, the non-return of the raven, the disembarking and sacrifice, not however the rainbow (but compare the 'Iliad,' XI, 27f:

Three on a side, and they likened to rainbows set of Kronion
High on a cloud, as a marvel to mortals articulate-speaking).

Another more fragmentary version of the Flood-story from earlier than 2000 B.C. has been found at Nippur and recently published (1914), and there are still others. The Babylonian poem is well worth reading as literature, far surpassing the Biblical in vividness and vigor, but as far surpassed in the inaccessible monotheistic sublimity of the latter. The certainty of community of origin in this case is reflected upon other parallels less exact. The Flood seems to have been a favorite theme for Oriental imagining, but its primitive meaning has not yet been made clear.

Very recently (1915) Stephen Langdon has published 'The Sumerian Epic of Paradise, the Flood, and the Fall of Mankind' from a Nippurian tablet antedating 2000 B.C. It differs very widely from the accounts already mentioned, but Langdon's interpretation is very vigorously rejected by other scholars, such as Barton, Jastrow, Prince, who find nothing about Paradise, Flood or Fall, but rather an imagination concerning the origin of a city and of social life and the beginning of Agriculture,—a view certainly favored by their translations. The likeness of Tagtug (or Takku) to Adam and Noah is faint. One of the most important discoveries ever made amid the monuments was that of the Code of Hammurapi (2104–2061), on a block of black diorite in three pieces, exhumed (December 1901, January 1902) by the French under de Morgan at Susa, whither it had been taken from Marduk's temple in Babylon, where the Semitic version of elder Sumerian laws was set up for the Semite to read them. These judge-made statutes, 282 in number, the oldest known, present very many points of agreement with the Mosaic law, and naturally very many more of difference. They contemplate a far more complex and highly organized state of society than the Hebrew, though more than a millennium older. The consciousness that dominates them is moral and jural, whereas that of the Pentateuch is ritual and religious. It cannot be made out that the latter has borrowed directly from the former, but a common consciousness is distinctly shown in many notable parallels. A similar remark, perhaps more emphatic, may be made touching the Carthaginian law of Sacrifices (of 5th or 4th century B.C.) in its relation to the Levitical.

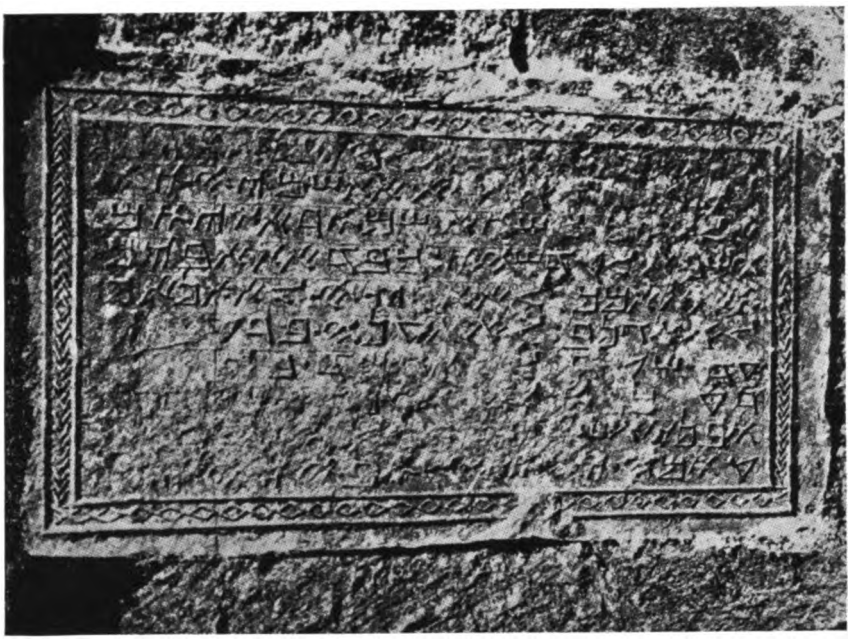
It is a far cry from the Pentateuch to the Psalms, and we are prone to think of the Psalter as the most peculiar book of a peculiar literature; yet it is exactly at this point that the Hebrew-Babylonian approach is nearest. The wedge-writing abounds in Psalms, especially the penitential, which often reveal the soul and a sense of sin with great distinctness. In general they are frankly polytheistic — yet intensely earnest, god after god being asked to intercede with some other,— though sometimes henotheistic, as when Bel or the Moon-god Sin is passionately and exclusively invoked in high wrought imagery and exalted conceptions, or in the Akkadian Hymn to Marduk* (c. 3000): "Who shall flee from before thy might? Thy will is eternal mystery. Thou makest it plain in heaven and on earth. Bid the sea, and the sea obeys thee. Command the tempest, and the tempest is calmed. Command the curves of the Euphrates, and Marduk's will shall stay the floods. Lord, thou art holy! Who is like unto thee? Marduk, thou hast honor among gods that are named." The reader will note the familiar chords. Finest are the hymns to the sun-god Shamash, extolling his justice and righteousness: "Thou guidest the law of the hosts of men. Forever righteous in heaven art thou. The righteous wisdom of the lands art thou." Especially splendid, even in its ruins is the great hymn to Shamash, of four columns, 424 lines, lauding his goodness and glory and might. The repetend, with which we are familiar in certain Hebrew Psalms, as "For his mercy endureth forever," characterizes also the Babylonian (and especially the magic-formulæ) thus:

" My god, who is lord of prayer, may he present my prayer to thee! (Ishtar)
" The god of pity, the lord of fields, may he present my prayer to thee;
" God of heaven and earth, the lord of Eridu, may he present my prayer to thee."

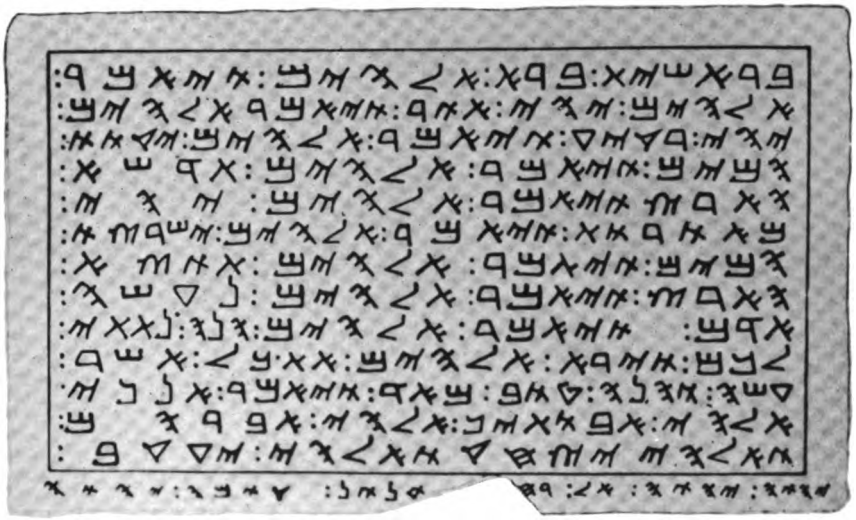
In many of these Psalms the note of anguish is loud, but it is the anguish of the individual sufferer; the grander note of national distress, where the voice of the whole people swells to heaven, remains silent in Babylonia, the privilege of Israel. However beautiful many of Babylon's Psalms, they scarcely equal the Egyptian, some of which approach monotheism, which was even fully attained under Amenophis IV (Ikh-n-Aton, "Man of Aton," as he called himself), who reached almost the topmost peak of religious consciousness in his long and wonderful hymn to Aton (the sun's disc, symbol of the One God): "Thou art in my heart; There is none other knows thee, Save thy son Ikh-n-Aton" (Matt. xi, 27).

From the Psalms one passes naturally to the Proverbs, though by a steep religious descent,

* The noblest religious projection of Mesopotamian musings, in his humanity and tenderness recalling at times the God of the New Testament.



**THE SHECHEM DECALOGUE INSCRIPTION**
Palestine Exploration Fund



**THE SHECHEM INSCRIPTION OF THE TEN WORDS OF CREATION**
From Lid Z karaki

Leaf from a manuscript of the Babylonian Talmud, treatise on idolatry (Aboda Zara), written in Ubeda, Spain, in 1290, now in the Library of the Jewish Theological Seminary of America, New York

BIBLE

and we find both Egypt and Babylonia rich in the Literature of Wisdom. The 'Precepts of Ptah-Hotep' reach far back into the 3d millennium B.C., a record of experience already hoary, and the great library of Ashurbanipal teemed with proverbial philosophy. The Assyrian seems rather closer both in form and in spirit to the Hebrew than is the Egyptian. "Before thy God mayst thou have a pure heart, For that is befitting a godhead." "The fear (of God) begets favor, Offering enriches life, And prayer brings forgiveness of sin." Ptah-Hotep: "If thou plowest and there is growth in the field, the god gives it as increase in thy land. Satisfy nbt thine own mouth beside thy kin." "Love thy wife without alloy." "Justice is mighty, immutable, fixed." "To please the master greatly, let us do for him more than he has bid," which recalls the Gospel saying. Since in the proverb it is mainly a matter of practical prudence rather than religious sentiment, it is not strange that the Assyrian and Egyptian rank well with the Hebrew, though overtoned by the voice of Wisdom in Proverb viii. The climax of ancient, at least, Egyptian morality is found in the 'Book of the Dead,' dating in form from the 18th, in ideas from the 3d dynasty, and the Judgment Scene with its three sessions of Introduction, Disavowal and Address to the underworld gods, reminds us at points of the picture (Mt. xxv, 31ff) that inspired the 'Dies Iræ.' The soul says: "I live, I feed upon right and truth; I have given bread to the hungry, and water to the thirsty, and raiment to the naked . . . therefore, let it be said 'Come in peace, Come in peace.'" Compare also "I have not caught fish with bait made of fish of their kind" with "Thou shalt not seethe a kid in its mother's milk."

It was especially in prophecy that Israel surpassed all other peoples, yet was not quite alone. As Samuel (1 Sam. iii, 3–4) and Zechariah (i, 7, 8) had visions of Yahveh in the night, and Isaiah (vi, 1) in the temple, so in the stress of Ashurbanipal's victorious struggle with Tiuman, King of Elam, "a seer lay down, he saw a prophetic dream" of Ishtar, armed like Artemis and Athena, promising her invincible help to her faithful worshiper, the Assyrian King. As the prophets, in particular Amos and Isaiah, denounce the avarice, luxury and oppression of the upper classes, so does the sense of common right and social justice find powerful and passionate utterance in the nine 'Pleas of the Peasant' in Egyptian story. In the prophets, the basis is always religious, such is the will of Yahveh; but the peasant Hunanup's appeal more than a thousand years older is to the level scales, to the abstract and eternal principles of truth and equity: "Speak the truth; for it is great, it is mighty, it is everlasting." Most characteristic of prophecy is the messianic expectation, the vision of a king of justice and holiness, who shall restore to its pristine beauty the marred visage of creation and establish a universal reign of righteousness and peace. Characteristic, but not peculiar, nay, almost as universal as the yearning of the soul of man. The classic peoples longed for the return of the Golden Age. In his famous 'Eclogue' it was proclaimed as at hand by Virgil, and the circummediterranean world hailed even Augustus as such a Saviour-Pacificator. But 2,000 years before, such aspirations had found expression in the musings of the Egyptian Ipuwer. However, the distinctly religious and monotheistic setting, along with the national consciousness of world-mission and destiny, remains unique in the Hebrew prophecies.

On the other hand, world-weariness, if pessimistic, may easily pass over into hedonism or even sensualism, the "carpe diem" of the Roman poet; such was not only the case with Qoheleth (the Preacher), as in ix, 7–9, but also of the Babylonian scribe of 2000 B.C., who exhorts Gilgamesh, "Day and night be joyful. Daily ordain gladness, Day and Night make merry and riot, Let thy garments be bright. Thy head purify . . . a wife enjoy in thy bosom"—quite in the manner of the Hebrew moralist. Close akin to this world-weariness, whether pessimistic in the Preacher or optimistic in the Prophets, is bewilderment at the moral government of the earth, at the sufferings of the righteous and the prosperity of the wicked. This problem of Good and Evil is grappled in the book of Job,—apparently with an eye on the misfortunes of the people Israel,—perhaps the finest product of the Hebrew mind, but 1,500 years earlier, the Nippurian Tabu-utul-Bêl, a righteous and religious official ("prayer was my wisdom, my sacrifice, my dignity") "advanced in life," appears to have fallen on evil days and slanderous tongues: "All day long the pursuer pursues me, In the watches of the night lets me breathe not a moment; Through torture my joints are torn asunder, . . . On my couch I welter like an ox. . . . My enemy heard, his face did gladden"—which reminds us not only of Job, but of the sufferer in the Psalms. The wonderful central mass of the Hebrew drama is without parallel in Babylonian, and its close, perhaps an addition, surpasses the account of how the Nippurian was cured by the messenger from Marduk. Thus the tale of the polytheistic magic-practising official sinks far below the empyrean flight of the Hebrew, but the parallel is none the less important.

Altogether by itself in Scripture is the Song of Songs, a cento of love-lays, lively and beautiful, if often indelicate in their suggestions. Similar ditties have been heard in the East and taken down in modern times, but the like were also heard in Egypt nearly 4,000 years ago, and remind us vividly of many passages in the Song, thus: "I am thy darling sister, To thee like a bit of land, Each shrub of grateful fragrance. . . . A beautiful place to wander, Thy hand in my hand, My soul inspired, My heart in bliss, Because we go together." Compared with Cant. v, 1; vi, 2, 3, these lines show that the elder bard has not only rivaled the Hebrew but also the moderns in celebrating the tender passion. It is noteworthy that the use of the term "sister," intelligible enough in Egyptian, clears up in a measure the use in the Hebrew.

Lastly the great finds of papyri (dated 494–400 B.C.) at Yeb or Elephantiné-island (in the Nile, near the first Cataract) (published London 1906; Leipzig 1911), show that the Jewish military colony established perhaps by Psammetik II of Egypt (593–88) had built a "temple of Yahu-god" there before Cambyses' conquest (525). A letter to Bagohi (407) tells how this temple had lain three years in ruins, destroyed by "wicked Waidrang." Having appealed in vain to the High Priest, Jehohanan, at Jerusa-

lem, they turned successfully to the Persian governor Bagoas (Bagohi) and to the two sons of Sanballat, Governor of Samaria, to order its rebuilding. The bearing of these facts on the date of Deuteronomy is disputed. It is possible that Isaiah xix, 19–22, may refer to this temple and not, as hitherto supposed, to that of Onias (170 B.C.). Another letter (419) from a certain Hananiah instructs the Jews of Yeb concerning the Passover, which seems to imply their ignorance of the Pentateuch, as critics maintain.

Such are the more important connections of Hebrew with profane literature, as they are recognized in the works of even conservative scholars, such as Rogers (1912) and Barton (1916). *Pan-Babylonism,* however, goes very much further in the learned works of Gunkel ('Schöpfung und Chaos in Urzeit und Endzeit'), Winckler in his new edition, with Zimmern, of Schrader's 'Keilinschriften und das Alte Testament,' his 'Israelitische Geschichte,' and numerous monographs, Zimmern in the same edition of Schrader, and elsewhere, A. Jeremias, the spokesman and continuator of Winckler, in his 'Das Alte Testament im Licht des Orients,' and especially Jensen, who in his colossal work on the Gilgamesh-Epos would seem to regard nearly all "world-literature" as an outgrowth from the Babylonian legend, even the gospel with its Christ. Less enthusiastic scholarship reduces such claims to far more modest dimensions. With more reason Zimmern, in his contribution to the "Jesus-Question," finds remote suggestions of New Testament teaching in primitive Babylonian ideas, and Gunkel finds the aboriginal cosmogonic struggle reflected in the Apocalyptic visions of the final consummation. The Winckler-Jeremias theories contain perhaps many golden grains of truth, but it will require years to sift them out, "Under the whistle of wind and the swing of the winnower's shovel." The eagerly expected publication of Ed. Glaser's North Arabian inscriptions may shed light on many dark places.

In conclusion, the revelations of the spade have undoubtedly wrought a profound transformation in our conceptions, both of the history and of the literature of Israel. The former is seen to have unveiled itself upon a world-stage of extraordinary range both in time and in space. Though dominated outwardly by the colossal empires that towered on both sides far above it, though it caught and reflected their light at various angles, and was all but lost in their shadows, it still maintained its individuality in a fashion and not only conserved but magnified, purified, and even glorified its unique ideals. Though Ikh-n-Aton may appear as the first great monotheistic reformer, yet his reformation was lost in the sand; though Delitzsch may be right in holding that Babylonia attained or approached the idea of the One God, of whom the many gods were only partial and inadequate phases, yet the idea never became effective in Mesopotamian thought or life. Israel still shines as the elect vehicle in history of the monotheistic conception. Similarly with respect to the Hebrew literature, we can no longer regard it as wholly unique and peculiar, the pure efflux of an isolated fountain, a well in the wilderness. It flows through a well-watered land and is fed from many sources. It is a tree on which indeed few grafts are set, but it spreads its roots far and wide and draws its sap from distant and ancient rivers. On the outstretched finger of time, this literature shines not indeed as a solitaire but still distinct and conspicuous in a brilliant cluster. The imperial libraries of Ashur and Egypt are immense in extent and by no means always inferior in literary quality; but the solitary sublimity of monotheistic religion and the inextinguishable national consciousness of world-mission and world-destiny still invest the Hebrew Scriptures with a beauty and a majesty all their own. We must indeed recognize fully the utter ineptness of such "Thoughts" as Pascal's (Art. XIV, ed. Lahure, VII, Bossut), unwarranted even when first they were penned,* but the present relation of the Bible and archæology need in no way disturb the reverent and enlightened spirit, whether Jewish or Christian, that rightly regards it.

For bibliography see article BIBLE.

WILLIAM BENJAMIN SMITH.

**BIBLICAL ARCHÆOLOGY. New Testament.**—The contribution of archæology to the understanding of the New Testament has not been less but rather more than to that of the Old, since, while it has indeed come from various quarters, yet the largest element has proceeded from a source far less prolific in case of the one than of the other. It is the recent finds of Egyptian papyri that have cast the broadest light upon the life of the first Christian centuries, at least on the banks of the Nile, but the discovery and decipherment of numerous inscriptions in other regions, especially in Asia Minor, have also cleared up many questions, while indeed starting many others.

The use of papyrus in writing is thought to date back nearly or quite 5,000 years, and the oldest preserved specimen, about 4,500 years old, to be the copy of an original a millennium older. Such writing, though a government monopoly till Alexander's conquest, was the constant occupation of numerous scribes. Papyrus rolls were of course very perishable, and it was Herculaneum that first, in 1752, yielded some charred ones written in Greek, which however were little valued. Twenty-six years later a roll discovered (along with 40 or 50 others) in an earthen pot, by Arabs in Egypt, was brought to Europe, where it excited small interest. Forty-two years then passed before the Serapeum at Memphis yielded the mass of manuscripts of the 2d century B.C., which supplied local color for Ebers' novels. The next year (1821) the so-called Bankes Homer (Book XXIV of the Iliad), purchased near Elephantiné, was brought to England; thenceforth the finds enriched more and more the treasury of the classics, and in 1839 the British Museum published 44 papyri. The recent period, marked by four great discoveries (in 1877, 1892, 1895, 1905–06) was opened 1877, by enormous finds at Arsinoë, at first but little

* Spoken rather, in a three-hour discourse to friends (1658). The 'Pensées' must be judged tenderly, as the product of four years' progressive invalidism; though written on scraps of paper, they sketch the grandest apology by the greatest mind ever enlisted in the service of tradition. But not even the ten years of health, alas! so vainly craved, could ever have justified either the premises or the methods of Pascal. Consult Étienne Perier, 'Préface,' and for specimens of criticism the 'Appendice aux Pensées.'

esteemed as non-literary fragments from Byzantine times; many others of the first three Christian centuries, better preserved and with interesting contents, were found in 1892 on the site of the neighboring village of Socnopaei Nesus. But already in 1890 the first great papyrus sensation had been felt in the discovery of Aristotle's 'Constitution of Athens,' supposed to be irrecoverably lost, written on the backs of four rolls (ledger of a small Egyptian farm, 78–79, A.D.), about 19 by 12 inches, a book, when translated, of 116 pages, startling by the strange light cast on the politico-legislative history of Athens. In 1891 Kenyon of the British Museum published a volume of 'Classical Texts from the Papyri,' including seven mimes of Herodas (found in 1889), and the next decade witnessed a rivalry among museums in the purchase and publication of the long neglected papyri, adding to the Greek classics masterpieces of Hypereides, Bacchylides and Timotheus, the 'Persai' of the latter found at Abusir near Memphis (Weidemann, 1902) in a coffin with a corpse and dating from the 4th century B.C., being the oldest Greek manuscript book yet known. In 1892 Ed. Naville disclosed a whole library in a government registration office at Thumuis in the Delta, but the charred rolls defied decipherment until 1915, when the editors of the Greek papyri in the John Rylands library, Manchester, succeeded in making 80 of them legible in publication, thereby disclosing an ancient book-keeping comparable with the best of to-day. Still earlier (1888–90) the illustrious W. M. Flinders Petrie had unwound extremely instructive papyri-manuscripts (of the 3d century B.C.) from the faces of mummies in the Hawara cemetery. Trained by him (1894–95), B. P. Grenfell, with A. S. Hunt, began digging (1895) in the Fayum (sunken oasis, 30 miles across, 40 miles south-southwest of Cairo), and in 1897 at Oxyrhynchus (south, on the canal supplying the Fayum with water) in the heaps of rubbish that gird this town, like others of the East, they began the series of discoveries that have restored so vividly the life of the Fayum from Philadelphus (270 B.C.) to the 3d century A.D. (when irrigation ceased and the desert sand resumed its sway), and have contributed no little to our comprehension of New Testament Greek. These remarkable finds have been published, text and translation, in a stately series of 14 volumes entitled 'Oxyrhynchus Papyri' (1898–1918). While the great mass of these and similar publications by the same and other scholars concerns only the private life of that time and clime (letters, accounts, receipts, deeds, tax-lists and the like), not a few contain verses of the Scriptures, particularly the New Testament. Of these, five date apparently from the 3d century (90 verses), two others from the 3d or 4th century (33 verses), and very many from the 4th, 5th and 6th centuries, while from the 7th comes a treasure in some ways still more remarkable, 20 fragments of a gospel lectionary, possibly a continuous text, written by three poor Christians not on papyrus but on much cheaper pottery. Such *ostraka*, long disregarded, are now carefully collected and studied, since the great work of U. Wilcken ('Greek Ostraca in Egypt and Nubia,' 1899) and W. E. Crum ('Coptic Ostraca,' 1902)

Altogether, the New Testament finds of recent years reach the imposing total of 28 New Testaments (17 on skin, 11 on papyrus), 14 parchment manuscripts (listed by C. R. Gregory, 1909), 20 papyrus manuscripts (Kenyon and Milligan, 1912–13), with countless fragments in hopeless dismemberment, an array constantly swollen by frequent additions. Chief among all, however, is the 'Washington Codex,' bought (19 Dec. 1906) with three others* by Charles L. Freer of Detroit from the Arab dealer Ali, in Gizeh, near Cairo, who got (Sanders), or possibly from near Akhmim, it from some ruined monastery in the Delta prolific of manuscripts (Schmidt). Critically edited, with facsimile, by H. A. Sanders (1912), it takes its place beside the other three great manuscripts, Alexandrine (A), Vatican (B), Sinaitic (ℵ), dating probably from the 4th century and bringing strong and unsuspected support to the "Western" text of the New Testament, hitherto chiefly represented by the almost outlawed *Codex Bezæ* (D). Almost as important is the palimpsest of the Gospels in Syriac, discovered February 1892 by the twins, Mmes. Agnes Smith Lewis and Margaret Gibson, in Saint Catherine's Convent, Mount Sinai, overwritten (778) with lives of women saints. Mrs. Lewis, having detected the words *Evangelion, Mathi, Luca,* in the underwriting, guessed that it was the Syriac Gospels, a guess that Professor Bensly was the first to confirm on examining the photographs made from it by the two sisters on Mount Sinai. The interesting question of the relative authority of this ancient Syriac version compared with oldest known Greek text remains yet debated and debatable. Five more recent visits of Mrs. Lewis to the Convent have resulted in various interesting finds, none comparable in importance with the first.

Less weighty are the rapidly multiplying Coptic New Testaments in the various dialects: (Sahidic) of southern, (Bohairic) of northern, (Fayum-Akhmimic) of middle Egypt. Nearly the whole New Testament may now be pieced together out of fragments in Bohairic; lately has also been found a manuscript (not complete) of the Gospels in Bohairic with Paul's, Peter's and John's Epistles in Sahidic possibly representing a text older than B's or ℵ's; and Dr. Budge has published (1912) the oldest known copy (350?) of any translation of any large part of the Greek New Testament (the Acts and the Apocalypse) in Sahidic (found 1901). Besides Proverbs and the Minor Prophets (the latter not yet published), not much of importance is offered in Fayum-Akhmimic.

More, if not most, important textually are the Old Latin versions, especially current in North Africa. These, displaced (384–400) by Jerome's Vulgate,† reach back into the 2d century, but only of late are coming into their rights as witnesses. Of the 18 fragmentary manuscripts 5 date from the 5th or even the 4th century. Thus far their voice has been faint, but very recent criticism, as represented by E. S. Buchanan and others, gives them full

*After rejection by Grenfell and Hunt.

†Of which the oldest manuscript is of the 6th century, one side of one leaf of an uncial Latin New Testament containing Mk. xvi, 15–20, with queer variants, and the other side later readings from Luke and John.

ear and would revise thereby the New Testament in the most radical manner, claiming a Latin original for Mark's Gospel and regarding the present accepted New Testament text as the result of a systematic corruption by the hierarchy in a semi-rationalistic sense. Whatever may be the final verdict of criticism, it seems certain that the deeper study of the Old Latin texts is both imperative and hopeful. Hardly less, nay, even more important than Grenfell and Hunt's unearthing of New Testament texts was their discovery (1896) of seven 'Logia' or Sayings of the Jesus, copied in the 3d century and referred directly to the Jesus by the recurring formula: "The Jesus says" (ὁ Ἰησους λέγει), seeming to indicate high antiquity. Several such were already known from extra-canonical sources; but the newest seemed to form part of a handsome volume and breathed a more mystical speculative spirit than prevails in the Canonic Gospels. In 1903, Grenfell and Hunt, on returning to Oxyrhynchus, exhumed five more such ancient Oracles (42 lines), written on the back of a list of land-surveys not later than 300 A.D., oracles of highly Christian but not quite canonic tone, veering still more from the Synoptics toward the mystical Fourth Gospel. In collected form these 'Logia' seemed to be not later and most probably much earlier than 140, in fact, quite as primitive as any Gospel, if not indeed presenting the very earliest known form in which "The (Doctrine) concerning the Jesus" (τὰ περὶ τοῦ Ἰησοῦ) was reduced to writing.

This momentous find has been supplemented in various directions. It had long been known that Tatian, the Syrian rhetorician and friend of Justin Martyr, had produced about the year 170 (180?) a 'Diatessaron,' a kind of Gospel Harmony, which in spite of criticism and in spite of the virtual absence of the human in its Jesus, almost displaced the Canonics in the Syrian Church (especially at Edessa) and was laid by Ephraem Syrus at the base of his Gospel Commentary (4th century), though itself displaced* in the 5th century by the Peshitta version of the Edessan Bishop Rabbula (411–35). But Tatian's 'Diatessaron' was known only from one incomplete manuscript of an Arabic version (14th century), a Latin version (Fuldensis, 6th century), and the Commentary of Ephraem till 1888, when Ciasca published, with Latin translation, a far better Arabic text (11th century) translated from Syriac in the 9th century, which omitted the last 12 verses of Mark as well as the Lucan incidents of the bloody sweat and prayer on the cross (xxii, 43–44, xxiii, 34). The 'Diatessaron,' by its early testimony to a Fourfold Tradition, has brought the orthodox much satisfaction not untempered with keen regret that in stressing the divinity it has slighted the humanity of the Saviour. Far more important the discovery, announced 1875 by Bishop Philotheus Bryennios, in the library of the Jerusalem Monastery of the Most Holy Sepulchre in the Phanar of Constantinople, of a parchment volume (copied and dated 11 June 1056, by the "notary and sinner," Leon) of 120 leaves, containing besides the so-called Epistles of Clement to the Corinthians and other less interesting matter, 10 priceless pages written with the 'Teaching' (*Didachè*), a long-lost document of two parts, often mentioned in early Christian literature, composed probably before 100 and containing matter far more primitive. Published in 1883, after a strangely accurate forecast by Adam Krawutzcky, 1882, it startled all Christendom with its voice, silent for 16 centuries. The earliest manual of Christian theory and practice, it is full of parallels to the teaching of the New Testament, agreeing strikingly in phraseology with the Gospels, but with hardly the slightest allusion to the familiar narrative element. Of course, it has been a storm-centre of discussion, but its witness remains unimpeached and unequivocal.

Scarcely less significant are the 64 leaves of Syriac discovered and published (1909) as 'Odes and Psalms of Solomon,' by J. Rendel Harris. Of these the *Psalms* are a Pharisaic collection (? 50 B.C.), long known in another form, but the *Odes*, unknown for 1,700 years, are Christian, at least in their recension, and recall the Palestinian soul of the 1st century in its deeper mystical musings, its higher poetic flights, and its wider spiritual visions, with frequent suggestion of the Fourth Gospel, as the 'Teaching' suggests the Synoptics. As a parallel to the New Testament these Odes are invaluable, though like the 'Didachè, they know little or nothing at all of the evangelic story. A dense cloud of books, pamphlets and articles, nearly 200 in number, has gathered and still gathers around this "Hymn-Book."

Somewhat similar in spirit, though far more artificial and less profound, is the 'Shepherd of Hermas,' a *vade mecum* of 2d and 3d century Christians, a product of the Roman soul, known only as cited or translated till 1856, when Tischendorf discovered one-fourth of it in a manuscript of the 4th century, on Sinai, and 1888, when S. Lambros found the other 12 leaves, of the 3d century. But, in 1900, seven more leaves were published, and in 1907 Kirsopp Lake published 'Athos Leaves, etc.,' facsimiles of the Hermas-fragments found on Mount Athos, as well as the 'Codex Sinaiticus' in 1911. Taylor has translated all and striven hard to show that this Pastor (dating from near 100) is saturated with covert allusions to the New Testament and with its phraseology disguised,—all of which the natural eye fails wholly to discern and especially any reference to the Synoptic story.

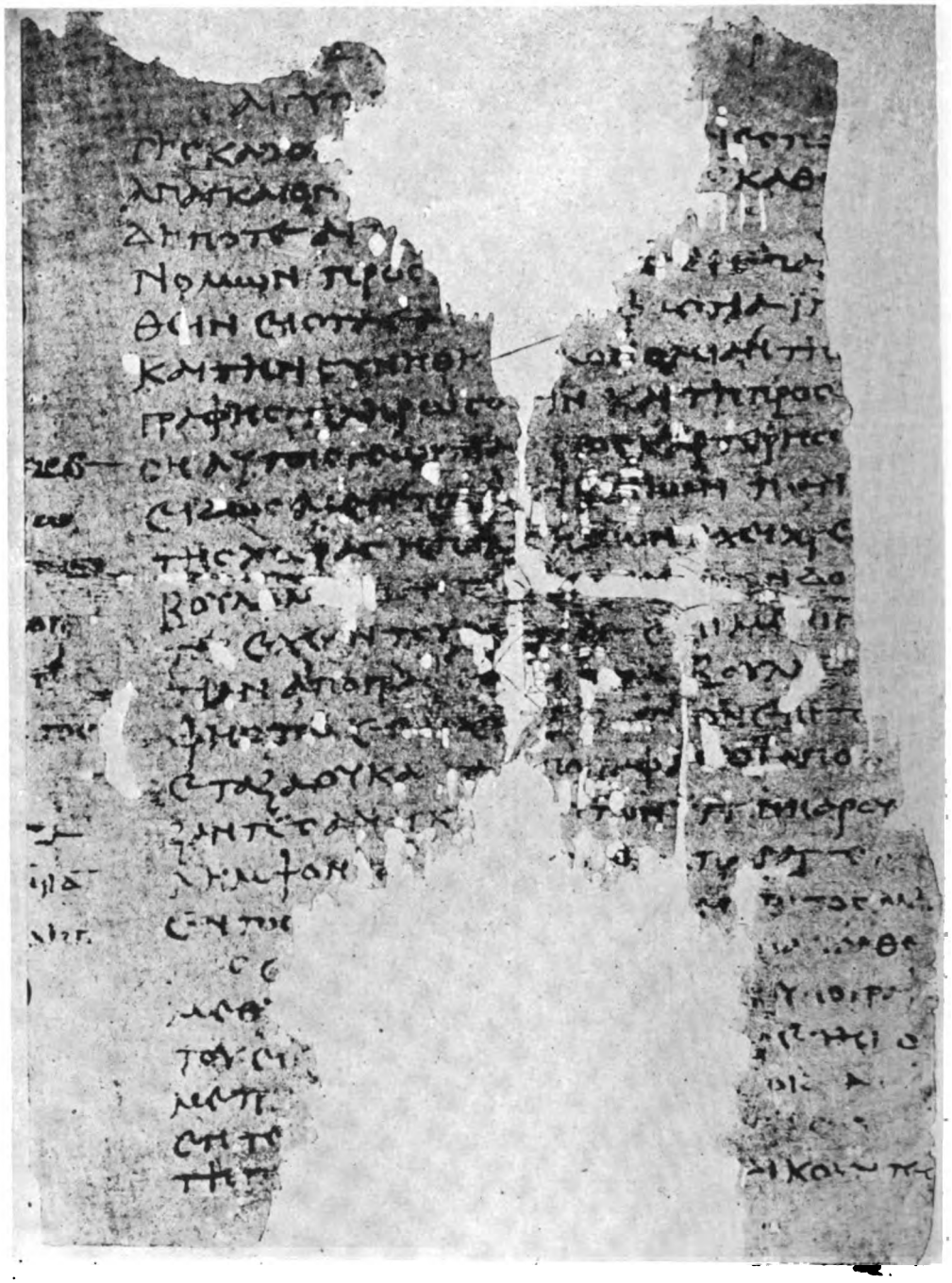
Other early Christian documents have been unearthed, too numerous to mention, such as the 'Gospel of Peter,' a 'Revelation of Peter,' also various 'Acts,' as of Peter, John and Paul (secured at Akhmim by Reinhardt, 1896), the 'Book of Revelation,' ascribed to Bartholomew, and various others,—all evidently products of religious fancy. Some were exceedingly popular in their day, like a modern "best seller," as also a noted book of devotion, 'The Ring of Pope Xystus,' written not later than 150, but first translated into English and edited, in 1910, by F. C. Conybeare.

Also certain long-lost works of the Fathers have come lately to light, as in 1904 the

* The Syrian Theodoret of Antioch, bishop of Cyrrhus, wrote in 423, referring to the 'Diatessaron': "I have found more than 200 such books highly esteemed by the churches in our part of the world. These I have collected and destroyed, every one, and substituted the Gospels of the Four Evangelists."

**OLDEST ORIGINAL OF A CHRISTIAN LETTER**

**Written in Rome between 264 and 282 by an Egyptian Christian to his brethren near Arsinoe. The papyrus is now the property of Lord Amherst of Hackney. From the reproduction by Deissmann**



EDICT OF G. VIKINS MAXIMUS PREFECT OF EGYPT

The Papyrus (of the year 104 A.D.) is now in the British Museum. From the reproduction by Deissmann

'Apostolic Preaching' of Irenæus, notable for establishing New Testament incidents from Old Testament prophecies; also 37 passages from an unsuspected treatise of Origen on Revelation were found 1911 in the Meteoron Monastery in north Greece. Far richer, however, the wealth exhumed of Christian Sermons (250–600), bearing witness in general to a fervid imagination directed with rhetorical skill, to a highly mechanical and extravagant orthodoxy, and much more to an all-pervading tendency to symbolic interpretation* of Scripture stories, —a very clear indication of the atmosphere in which these were born. Deficient as they were in knowledge, the preachers of old do not yield in mental power to their successors of to-day. Numberless Amulets (bearing Gospel versions like beads, with prayers for healing) show that paganism and magic, especially in the use of the "Name" had departed not wholly from the first Christian centuries and returned powerfully in the later. Much of the phraseology of petition is dignified and impressive, eloquent with invocations still heard in Church service.

The great hymn of Clement of Alexandria, long accounted the oldest of Christian songs, consisting almost wholly of a succession of poetic epithets of the Jesus, is now at last rivalled in antiquity by one similarly discovered at Oxyrhynchus. Almost as old is the famous Syriac 'Hymn of the Soul,' quite extraordinary in its sustained symbolism and imagery. Complete Coptic Psalters (6th or 7th century) have been recently uncovered. These ancient hymns disclose a strong movement toward Mariolatry, as the devotee mused on the mystery of the Virgin birth. Many Christian letters recently deciphered give welcome and intimate glimpses at the early disciples; along with which are others pagan, but so nearly like the Christian in language and spirit as to be scarcely distinguishable. One gets the impression that these souls were Christian because they were noble, rather than noble because they were Christian. In the descent toward the 7th century the early simplicity degenerates into mock modesty and humbleness. Christian epitaphs, found in great numbers, are strangely enough often hard to discriminate from the pagan, though in general sounding a clearer note of hope. Some have established model forms in use even to this day. Least attractive of all such religious relics are the 'Libelli,' certificates of Christianity disclaimed, of which Krebs detected the first (1893) in the British Museum, Grenfell and Hunt the fourth in 1904, dating from the Decian persecution (ca. 250), and Meyer published 19 others (1911); still later the number has risen to about 30, mostly from Theadelphia. It remains possible that such disclaimers may have proceeded from sincere pagans falsely reported as Christians. It is remarkable that the persecuting emperors, Trajan (112), Aurelius (176), Septimus Severus (202), Decius (250), were among the noblest that adorned the Roman throne; they regarded the new religion as anti-patriotic.

While Egypt has yielded papyri, it is Asia Minor, and particularly Phrygia, that has most enriched the fund of inscriptions. Palestine might indeed have been expected to speak most eloquently of early Christianity; but nay; though 11 cities have been excavated and called to witness, they are dumb; the decipherments of Dalman, Schmidt, and others do not hark back beyond the 4th century. The greatest single interpreter of Græco-Roman life is Pompeii, but its testimony is too early to illuminate Protochristianity. It is the stupendous excavations at Rome that shed light upon the 1st century, whence dates the earliest Christian inscription (72) of the oldest Catacombs (of Domitilla, Priscilla, Commodilla, (crypt) Lucina) while the majority are of the 4th century and the latest from the time of Alaric (410). The output of Catacomb-inscriptions has been enormous in number (15,000 of De Rossi alone) rather than significant or instructive. The temper of the people is revealed as peaceful, trustful, hopeful, their religion as centred in the worship of Christ as God (under form of a beautiful shepherd youth) and as abounding in symbols, their morality as pure, their ritual as simple, their art as classic and excellent. Connections with the New Testament or Palestine, if any at all, seem very remote.

As yet the papyri bear no clear witness to Quirinius as governor of Syria before 6 A.D., but they have yielded decisive information touching the Roman census (Luke ii, 3), from which U. Wilcken has shown (Hermes, 1893) that the regular registration fell on each 14th year from 20 A.D., and possibly from 6 A.D., or even 8 B.C. The enrolment was by households, and naturally all members of a family were expected to be at home at the taking. An order to this effect, in No. 408 of the Greek Papyri in the British Museum, reads thus (translations of the supplied portions of the mutilated text being inclosed in brackets, and the initials of the lines capitalized): "G(aius Vibiu)s Maximus (pref)ec(t) (Of) Egypt (says) Because of the (im)min(ent census by) house (holds) Necessary (it is for all tha)t any time for a(ny) rea(son have departed from their own) Nomes to be no(tifi)ed to r(etu)Rn unto their ow(n he)arth stones tha(t) Also the accustomed (dis)pensation of th(e en)Rolment they may fulfil and to the farmland be(lon,)ing to them may firmly adher(e)." — This edict *recalls to their own present homes* the peasants that have gone out (ἐκστάσι). In spite of learned attempts to wrest its meaning into the exact opposite, it gives not the slightest hint of going to "ancestral abodes" (Luke ii, 4),— as if a Kansas farmer should return to Vermont to register!

In Egypt also the symbolism of the Good Shepherd appears, the ancient burial rites were christianized and preserved, the figure and functions of Osiris are supplanted by similar ones of the Saviour, the two being sometimes indistinguishable, and Isis nursing Horus is transformed into the Madonna with the Child. The venerable swastika, welfare symbol of the Age of Bronze, is everywhere sanctified, and even Anubis and Apuat adorn the skirts of a Christian burial-robe. So tenacious of life were the mythologic *motifs*, and so they have remained. If one may trust the inscriptions, it was in Asia Minor, and mainly in Phrygia, that Christianity took its firmest and widest

* Often far-fetched, as when Athanasius identifies the laborers (Matt. xx, 1–16) with the long series of Scripture worthies from Moses to the Apostles.

hold. A region largely inhabited by Jews, many of them wealthy and prominent, descendants (says the Talmud) of the Ten Lost Tribes, 2,000 having been imported from Babylon by Antiochus Magnus (ca. 200 B.C.), who had become in large measure paganized and so were open to the universalism of the Gospel. Here, too, flourished the mystery-cults of Atys, Adonis and others, whose deep imprints on New Testament phraseology as well as ecclesiastic dogma and ritual are daily becoming more visible. This region has been the favorite haunt of excavators, conspicuous among whom, at least for zeal and production, is Sir William M. Ramsay, whose intense pursuits led him to the famous South Galatian Theory in answer to the puzzling query, Who were Paul's "foolish Galatians"? —a theory zealously advocated by archæologists and as earnestly rejected by linguists in favor of the North Galatian Theory. In northern Syria, also, numerous cities have been exhumed, as well as the extensive Christian cemeteries of Salona, the ancient Adriatic port of Dalmatia, but their revelations are more important in artistic and sociologic than in biblical bearings. Great interest has attached to explorations, notably the Austrian (1897–1913), at Ephesus, especially because of the uproar narrated in Acts. The title there (xix, 35) given to the city, "temple-warden of ... Artemis" (*νεωκόρον . . . Ἀρτέμιδος*), is confirmed by a dedication exhumed, and Dr. Hicks (half-supported by Ramsay) fancies he finds the Demetrius of Acts xix, 24 at the head of Ephesian magistrates; an official inscription speaks of Julius Cæsar as "God made manifest . . . saviour of human life"; a Christian tablet tells of a "deceiving image of the demon Artemis" and of a "God that banishes idols," where the identification of "demon" with heathen god sheds light on the Gospel "demons"; neither is it strange, in a city given to the worship of the "Great Mother" and the chaste Artemis, that many inscriptions attest an early reverence for the Virgin Mary.

Touching the moot question, Was any altar at Athens inscribed "To an Unknown God"? answered negatively by E. Norden in 'Agnostos Theos' (1913), Deissmann has published (1911) a picture of an altar uncovered (1909) in Pergamon, "To Gods Unk[nown],"* where the added "s" makes a difference; but endless explorations at Athens have discovered nothing Christian of importance. At Delphi, however, a fragment (found 1908), inscribed with a letter of the Emperor Claudius, dates the Achaian proconsulship of Gallio from the summer of 51; Paul then would seem to have left Corinth the autumn of 51 and to have reached it early in 50 (Acts xviii, 11, 12): an important synchronism, throwing back the beginning of his mission almost to the received date of the pentecostal wonder. Remembering that Paul did not inaugurate the Gentile mission, but found it in full flood and was upborne by its current (Bousset, 'Kyrios Christos,' p. 93), one sees that this mission dates practically from the first dawn of Christianity.

At Antioch (in Syria) some well-diggers exhumed (1910) a silver chalice or communion bowl of rude workmanship but covered with a silver sheet on which amid exquisite grapevine decorations are wrought "portrait-figures" of Christ and 10 Apostles, said to be of exceeding excellence. Pious imagination has dated this sheet between 57 and 87 and has even thought to recognize in the central figure a genuine portrait of the head of Christ. From numberless other excavated cities various glints are cast upon the New Testament and Protochristianity, as when "life" and "light" are found on the door-post of Artemis' temple at Sardis, or at Assos an inscription of the soldiers' sacrament to Caligula (37): "We swear by the Saviour and God, Cæsar Augustus, and by the Pure Virgin," i.e., Athena Polias (Cityguard), to whom the temple was built. Very interesting and important are the revelations of the life and soul of the empire, which make plain that former notions of its depravity were gross exaggerations. Many centuries of war and conquest had indeed hardened the Roman in his native cruelty and bloody-mindedness,—much less time has sufficed in other cases,—and licentious self-indulgence flourished then perhaps even more than now in the ruling and predatory classes; but the heart of the people was still sound, the homely virtues were still prized and honored and cultivated, and public benefactors were not less numerous or generous than to-day. Civic spirit and social charity were indeed at their height, and almost a frenzy of philanthropy seemed to possess the empire under the Antonines, when philosophy sat upon the throne. Under a slight scarcity of provisions, in time of great national danger and endeavor, profiteering has run amuck among us, prices have doubled or even tripled, and ships offered earlier for sale at $65,000 and $60,000 have been patriotically sold to the government for $650,000 and $800,000. Compare herewith the Ephesian public inscription in honor of three wealthy men who had sold their stores of wheat at cost during a famine. Undoubtedly the Græco-Roman consciousness furnished a soil not unfit for the sowing of the Gospel.*

Linguistically, it has come clearly to light that the language of the New Testament was not, as so long imagined, a more or less sacred tongue or dialect, but was the all-prevalent *Kainé*, the every-day speech of the people, not untinctured with the mystic phraseology of the mystery-cults, and soaring at times into solemn sublimity on the wings of a missionary spirit of religious zeal. The net result of these exhumations, which future researches are sure to enlarge and confirm, putting a quietus on all rationalistic attempts to derive Christianity from "The Carpenter of Nazareth," has been to delocalize and depersonalize our conception of the origin and early progress of the Christian movement. In the words of Professor Gurlitt, "The rapid spread of Christianity, hitherto an insoluble riddle, receives a startlingly simple explanation, and indeed the whole speech of the New Testament becomes

* The Greek is *θεοις-αγ*. This has been completed by Hepding into *ἀγ[νωστοις]*, uncertainly, as he admits (1910).

* At this point epigraphy weighs down the scale of Pliny the Younger against Tacitus, Juvenal, Martial, Petronius. Consult Dill, 'Roman Society from Nero to Marcus Aurelius,' written with equal fulness of learning and sympathy.

now, for the first time, understandable." The setting now supplied for the world-revolution is nothing less than the Judeo-Græco-Roman world. The religion of the Jew, the art, science and philosophy of the Greek, the law and administration of the Roman,—the ethical monotheism of the cultured, the mysticism of the Asiatic cults, the passionate longing for union with God in the Mysteries, the sense of Brotherhood fostered in the guilds and *thiasoi*, the seething cauldron of hopes and fears, of superstitions and sufferings in the multitude,—all these and far more mingled their elements in the mighty Birth of 19 centuries ago. In this new "Light from the East" the Palestinian portrait bursts its miniature frame and spreads away into the measureless canvas of the circummediterranean world.

For bibliography see article BIBLE.

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**BIBLICAL CRITICISM. Textual Criticism of the Bible.**—The object of Textual Criticism is to ascertain the original text of a literary work, as written by the author or authors. Since its objects and principles do not vary essentially in different fields of operation, its application to the Bible gives it no special characteristics. Literary works vary, of course, in the nature and amount of the materials available for textual criticism, this being true of the Old and New Testaments in comparison with each other, and also of the individual books or even parts of books. Textual Criticism is sometimes called Lower Criticism, in distinction from Higher Criticism. The term Textual Criticism, however, is more exactly descriptive, and hence to be preferred.

The materials available for the textual criticism of the Bible may be classified under three heads, (1) *Manuscripts.* These are the principal source in the New Testament, more than 3,000 being in existence which contain the whole or a part of the New Testament, of which the earliest are assigned with much confidence to the 4th century A.D. In the Old Testament the manuscript material is of comparatively little importance, since the oldest manuscript, of a part of the Old Testament, is dated in 916 A.D., and the manuscripts show but few variations of importance. An exceptional position, however, is occupied by the Samaritan manuscript of the Pentateuch. This is of uncertain date, but probably comparatively old, and its evidence is of much value. (2) *Versions,* that is, translations into other languages than the original. Several of these have a real, though subordinate, value for New Testament work, the Syriac and Old Latin being most important. In the Old Testament, however, they are the principal documentary source. The chief of these, in the order both of age and importance, are the Septuagint, a Greek translation, made, at least for the most part, in the 3d and 2d centuries B.C.; the Peshitta, a Syriac translation belonging probably to the 4th century A.D., but based on versions as early as the 2d century; the Vulgate, a Latin translation made by Jerome, completed in 405 A.D.; and various Targums, which are Aramaic translations, first oral and then written, these belonging, in the written form, to the period from the 5th to the 9th centuries A.D. (3) *Quotations.* Those from the Old Testament which are sufficiently ancient to be of value are in the Talmud and other Jewish writings, but the textual variations they exhibit are of minor importance, although they would doubtless repay more careful study in reference to this matter. Those of value in relation to the New Testament are found in the early Church fathers, and these have been studied with considerable thoroughness but have not furnished much material of importance.

The textual criticism of the New Testament has been the subject of much careful work which has produced results of great value. Among those specially prominent and successful in this study may be mentioned Michaelis, Tregelles, Tischendorf, Westcott and Hort, and Von Soden.

Textual criticism is necessary because of textual corruption, changes from the original form of the text. This textual corruption has arisen in large measure from the scribal copying by hand, but partly also as a result of corrections, so-considered, of manuscripts already copied. The corruption is either deliberate or accidental. Deliberate corruption includes principally grammatical corrections, assimilation to parallel passages, explanatory additions, usually first written in the margin and later put in the text, and dogmatic changes, the last being undoubtedly found but not numerous. Accidental corruption is quite certainly more frequent and more important than deliberate. This results from the carelessness that is in some measure inevitable in copying by hand.

The following are the principal forms of corruption that are due to accident: (1) *Dittography and Elision.* Dittography is the repetition of letters or words, and elision is the omission. Both are usually due to the occurrence of the same or a similar combination of letters or words at two points near together, the scribe unconsciously passing from one to the other. (2) *Additions,* not of the nature of dittography. These are usually scribal explanations on the margin, and hence at first deliberate; but the reception into the text is usually accidental. (3) *Conflation.* This results when a scribe or corrector is acquainted with two readings and is uncertain which is correct so that he includes both. Here the inclusion itself is deliberate, but the corrupted text on which it is based is ordinarily accidental. (4) *Changes.* This is frequently by mistake for a word that is similar either to the sight or the hearing, as manuscripts were copied in both ways, and sometimes also by mistake for a word of similar meaning. It sometimes arises, also, from the illegibility of the manuscript that is being copied.

The methods of textual criticism are two, comparison of documentary evidence, and conjecture. Where material for the former is abundant, as in the New Testament, the latter has little place. Where such material is scanty, as in the Old Testament, conjecture must be used, although it should always be with caution.

The chief principles generally recognized in the employment of documentary evidence are the following: (1) The weight of manuscript evidence is to be considered, although this alone cannot be decisive. The weight of

evidence does not come from a mere enumeration of manuscripts, but must take into consideration their division into classes and relation to each other, with special reference to their genealogical relation, that is, the derivation of one from another or of two or more from a common earlier manuscript. The result of such study is that some manuscripts are to be regarded as of much greater value than others. But any estimate of the value of a manuscript is itself based in large measure upon the question of the correctness of its readings. Hence such judgments can be only tentative or there is danger of reasoning in a circle. (2) The most comprehensive and generally accepted principle is this, that reading is to be preferred which best explains the others. A special application of this is often stated thus, the more difficult reading is to be preferred. But that is by no means universally the case, it applies particularly to deliberate changes, and is of comparatively little importance in relation to the Old Testament. (3) The reading should be suitable to the context. On this point, however, there is obviously an especially wide opportunity for difference of opinion.

**Higher Criticism of the Bible, Historically Considered.**— For a discussion concerning the nature of Higher Criticism see the article, HIGHER CRITICISM. The employment of Higher Criticism must have characterized Biblical study from the earliest times, no thorough study could be made without its use in some measure. A few of the early Church fathers, notably Origen, particularly illustrate this. But such early use was unsystematic and comparatively unimportant. It is only in modern times that Higher Criticism has become one of the most important elements in Biblical study.

Higher Criticism, being a study of internal evidence, proceeds by an inductive method. The use of inductive methods is one of the prominent characteristics of modern science. Without doubt the large use of Higher Criticism in modern times is simply one phase of the general scientific progress of this period, it is the application of scientific method of literary study.

The evidence used in Higher Criticism may be conveniently classified as of three kinds, literary, historical, and that arising from the thought. In the historical development of Higher Criticism these three varieties of evidence have become successively prominent in the order named.

Especially at first the use of Higher Criticism was much greater in connection with the Old Testament than with the New Testament, although the general historical development was similar in the two cases. Hence in this brief historical account it is the application to the Old Testament that will be more largely considered.

Some use of Higher Criticism was made at the time of the Reformation and after. But the beginning of any systematic use, and so of the really modern period, should be put in 1753. In that year Jean Astruc, a French physician, published 'Conjectures sur les mémoires originaux dont il paroit que Moyse s'est servi pour composer le livre de la Genèse.' This presents the view that Moses in writing Genesis made use of two earlier documents, in one of which God was known as Jehovah and in the other as Elohim. The evidence he presents is thus purely literary. J. G. Eichhorn, in his 'Einleitung ins Alte Testament' (1780–83), called attention to the fact that the Jehovah and Elohim sections were also characterized by differences of style, and that the same documents are to be discerned in the remainder of the Pentateuch. He first called this method by the name "Higher Criticism," and treated the whole Old Testament from this standpoint. The general type of view which he presented has been called the "document-theory." The "fragment-theory" of Alexander Geddes, which appears in 'The Holy Bible, or the Books accounted Sacred by Jews and Christians, etc.' (1792–97), does not differ from it in principle, but contemplates smaller documents, or fragments. Others followed along the line of each of these views.

The second stage was introduced by W. M. L. De Wette in 'Kritik der israelitischen Geschichte' (1807), and in other books. He made use of historical evidence in addition to literary. His specific view is called the "supplement-theory," because he thought that the writer of Genesis made use of one principal Elohistic document which he supplemented by the use of various Jehovistic documents. De Wette gave particular attention to the origin of the documents, in connection with his special study of historical evidence.

The third stage was marked by the prominent use of the evidence from thought, in addition to that of a literary and historical nature. This means that a large amount of attention was given to the development of religious thought, particularly in the Old Testament. The philosophical theory of evolution has strongly influenced the way in which this evidence has been used. The beginning of this stage appears in two works published in 1835, that of Wilhelm Vatke, 'Die Biblische Theologie wissenschaftlich dargestellt,' and of Leopold George, 'Die Älteren Jüdische Feste.' Eduard W. E. Reuss, of Strassburg, became one of the most eminent of the teachers of this phase of the study. A pupil of his, K. H. Graf, thoroughly combined the three lines of evidence. He taught the priority of Deuteronomy to the Priest Code, the latter being dated, in his ultimate view, after the exile. Abraham Kuenen, in 'Historisch-critisch Onderzoek naar het ontstaan en de verzameling van de boeken des Ouden Verbonds' (1861–65), gave special attention to the details of the religious development. The theory of Graf was elaborated by Julius Wellhausen, in 'Die Composition des Hexateuchs' (1889), which had been published earlier, in 1885, as a part of the series Skizzen und Vorarbeiten. His view of the documents of the Hexateuch, including Joshua with the Pentateuch, is that they consist of J, Yahwist or Jehovist, the work of a Judean prophet or prophets, written about 800 B.C.; E, Elohist, a prophetic work of Israel, written about 750; D, embracing the most of Deuteronomy, written shortly before 621; and P, the Priest Code, composed at various times mostly during and after the exile and completed by Ezra about 444. This view in substance is the prevailing one to the present day.

While the Pentateuch, or Hexateuch, has been the chief subject matter for the development of Higher Criticism, more and more the whole Old Testament has been included within its scope. The discussion of the authorship of the several portions of the book of Isaiah began soon after that concerning the Pentateuch, and has had many phases.

The more recent study has been devoted, in the case of the Hexateuch, to a more minute study of the details of the analysis, and to more careful study of the relation of the documents to the history and the development of thought. The whole Old Testament has been studied, from the standpoint of Higher Criticism, with increasing attention to detail. The result is that, in the view of many critics, nearly all books of the Old Testament are considered to contain elements of diverse dates, the original writing having been supplemented by various additions, and in several books two or more documents are believed to have been combined. Many English and American writers have been prominent in the later discussions.

The pioneer work in the development of Higher Criticism has been done for the most part in the Old Testament. New Testament criticism is, therefore, in large measure an application of methods and lines of evidence in use in the Old Testament, although in recent years the Higher Criticism of the New Testament has acquired great prominence. Eichhorn, who has been mentioned earlier as conspicuous in reference to the Old Testament, is one of the early leaders in New Testament criticism. In his 'Historisch-kritische Einleitung ins Neue Testament' (1804), he, for the first time, clearly grasped the synoptic problem and proposed the hypothesis of an original gospel before the present gospels. The work of De Wette was notable on the New Testament as well as on the Old, the results being seen in his 'Lehrbuch der historisch-kritischen Einleitung in die kanonischen Bücher des neuen Testamentes' (1826).

Almost simultaneously with the beginning of the third stage of Old Testament criticism, and corresponding to it, came a strongly-marked movement in New Testament study. This was the work of F. C. Baur, 'Die Christuspartei in der Corinthischen Gemeinde,' in the *Zeitschrift für Theologie* (1831), and later books; this is sometimes called the Tübingen criticism. sions. In particular, he was dominated by the His work was strongly influenced by prepossesphilosophy of Hegel, especially in its theory of development that history moves through the three processes, thesis, antithesis and synthesis. The principal position of Baur was that the New Testament shows the conflict between two parties, original Christianity which was a Jewish sect, and Paulinism which had the broader spirit. His position aroused violent discussion, the theory being generally held to be extreme; it has now been entirely abandoned. Baur rendered great service, however, in putting emphasis upon the necessity of seeing the New Testament in its relation to the whole thought of the time.

The principal problems of the Higher Criticism of the New Testament which have been considered in recent times, in addition to those relating to epistles called Pauline which have always been prominent, are those of the authorship, editing and sources of the synoptic gospels, the gospel of John, the book of Acts and the book of Revelation. See APOCALYPTIC LITERATURE; BIBLE; HIGHER CRITICISM; PENTATEUCH, and the various articles on the books of the Bible.

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**BIBLE IN SPAIN, The.** 'The Bible in Spain' (1843) is an account of the experiences of the author, George Borrow, in the Spanish Peninsula in the years 1835 to 1840, as agent for the English Bible Society. In his rather quixotic but highly congenial task of distributing copies of the New Testament in the vernacular Borrow encountered a series of surprising adventures among rude peasants, smugglers, bandits and Spanish gypsies which are duly recorded and lose nothing in the telling. Many portions of the narrative, as, for instance, the account of the journey from Badajos to Madrid in the company of the mysterious gypsy, Antonio, read more like the adventures of a Sir John Mandeville than like the real experiences of a modern traveler in a civilized land, yet we are assured by Borrow's recent biographer that this book, like 'Lavengro' and 'The Romany Rye,' is a faithful record. Whatever may be the relation of fact and fiction in Borrow's work (and the matter can hardly be said to have been settled) it reveals as no other book has done the wonder and the mystery of romantic Spain. Borrow's linguistic facility and his truly remarkable power of placing himself on a footing of equality with the strange persons whom he encountered enabled him to see their lives from

the most intimate standpoint. By the gypsies he was regarded as one of their own brotherhood. 'The Bible in Spain' is one of the strangest books that was ever written and one of the most fascinating. Good editions of 'The Bible in Spain' are published in English. Consult Walker, Hugh, 'The Literature of the Victorian Era' (1042ff.).

JAMES H. HANFORD.

**BIBLE SOCIETY,** a religious society organized and maintained, for the translation, publication and distribution of the Bible or parts thereof at home and abroad, in English and in many other languages. Naturally the Bible Society is a Protestant effort. It grew out of the attempts of the various Protestant denominations to make known the general principles of Protestantism and the particular views of the numerous Protestant sects. The invention and perfection of the printing press made these efforts effective. All denominations of Protestants were anxious to spread abroad a knowledge of the Scriptures. Numerous Protestant societies made a business of distributing free copies of the Scriptures at a very early date on the history of the Reformation and the growth of Protestantism; but none of these efforts were controlled and directed by the one motive, that of the handling of the Scriptures. As early as the time of Spencer, Baron Hildebrand von Constein, a close friend of the latter, along with other Protestants, founded a society for providing copies of the Bible for those not able to purchase them. This society had given away or sold, at a price often below cost, nearly 3,000,000 Bibles and more than 2,000,000 New Testaments, before the modern Bible societies came into the field. In England in 1780 there was formed an association for the distribution of the Bible among soldiers and sailors under the name of "The Bible Society". Later the title was changed to its present designation, "Naval and Military Bible Society." Twelve years later the French Bible Society was formed in London for the purpose of distributing Bibles printed in French. No attempt was made to print the French Bibles in England but the funds collected by the Society were sent to France. During the French Revolution the premises and plant of the Society, together with its funds, were taken possession of by the revolutionary party and, for the most part, destroyed. After two years of effort the British and Foreign Bible Society was formed. Its establishment was due, in great part, to the enthusiasm of Thomas Charles, a Welsh minister, who urged the Religious Tract Society to supply the lack of Bibles which he found everywhere among the poor people in Wales. The hint was followed up and a society for the supply of Bibles in all parts of the world was the direct result. All Protestant denominations were invited to help in the work. The Society grew rapidly and extended its sphere of action and influence. In 1912-13 its expenditures amounted to almost £270,000. But this was but a small part of its work; for auxiliary societies sprang up everywhere throughout the British domains; and these now number in the neighborhood of 6,000. The Society publishes both the authorized and the revised version of the Bible. Naturally, owing to the influence under which the Society started, it gave great prominence to the distribution of Bibles in Great Britain in both English and the Gaelic languages. But gradually it extended its sphere until now it translates (where necessary) and prints the Bible in all languages and even dialects where there is a call from missionaries for such work. The Bible, or parts thereof, is now printed and distributed in over 450 languages and dialects and the work of distribution requires more than 1,200 agents and distributors. One fact alone shows the vastness of this undertaking; over 50 different alphabets or modifications of alphabets are employed in the printing of the Bible, or parts thereof, issued by the Society. In a recent year the work of the Society stood as follows:

| | No. of languages printed in | Copies distributed |
|---|---|---|
| Bibles | 111 | 968,377 |
| New Testaments | 108 | 1,584,262 |
| Parts of Bible | 231 | 4,841,884 |

The total issue of the British Society during its existence up to the close of 1916 was, in round numbers, 250,000,000 copies. So broad has become the work of the Bible Society that there is scarcely a country or part of the world where its agents are not at work whether they are missionaries or lay distributors.

In Scotland the various Bible societies have been united into the National Bible Society of Scotland since 1861; while in the United States the principal work of the Association is carried on by the American Bible Society. In Germany, though there are a number of Bible societies, that of chief importance is the Prussian Central Bible Society of Berlin founded in 1814. It has branches in many parts of Prussia and distributes over 100,000 Bibles a year. All the other divisions of the German empire have also Bible societies. Some of the German Bible societies do not print their own Bibles but get them from London, from the British and Foreign Bible or from Berlin Society. However the German societies have of late been extending their sphere of influence and broadening their efforts until now the Lutheran version of the Bible is to be met with everywhere.

The one great country where the Bible Society has had but little effect upon the masses of the people is Russia. There the work of its 300 or more agencies is confined almost exclusively to the foreign population. This condition is due to the attitude of the government and that of the Greek Church, both of which took the position in 1826 that the task of supplying the Scriptures to the people could properly be performed only by the Holy Synod. This resolution automatically stopped all secular work in the distribution of Bibles to the members of the Greek Church throughout Russia and confined the efforts of the Bible Society to looking after the great mass of non-Greek-Church foreigners within the bounds of the empire. So the Bible still remains to be translated into most of the languages and dialects spoken by the vast unhomogeneous population of the Russias. In Austria the influence of the Bible Society has been even less than in Russia; for, since 1817 its operation throughout the Austrian empire

has been rendered illegal by restrictions on the part of the government. The issue of Bibles by the American Bible Society shows a steady and rapid increase, as the following table demonstrates:

| Year | Bibles | Testaments or parts thereof |
|---|---|---|
| 1816–1825 | 251,642 | 187,938 |
| 1825–1850 | 2,673,826 | 4,459,561 |
| 1850–1875 | 6,786,260 | 18,766,539 |
| 1875–1900 | 9,126,515 | 26,701,153 |
| 1900–1913 | 6,793,603 | 25,476,673 |
| 1916 | 7,761,377 | ..... |

In 1661 John Elliot translated the New Testament into the Algonquian Indian language and had it printed at Cambridge. This was the beginning of activity in this work which was destined to assume vast proportions. Two years later he finished the translation of the complete Bible into Algonquian and published it. It was not until 80 years later that a German edition of the Bible was published at Germantown, Pa. The first English Bible published in America appeared in Philadelphia in 1782. Thus it will be seen that the progress of the work of printing Biblical literature in America was very slow in the years of colonial life. The establishment of the first American Bible society in Philadelphia in 1808 was followed by considerable activity in the same work in other places. In 1809 New York, Boston, Princeton and Hartford all established Bible societies. The next seven years saw 54 new Bible societies started in the United States, making in all a total of 59. In this latter year (1816) 35 of these societies meeting in New York, organized the American Bible Society with the subscribing Bible societies as local organizations. This Society was incorporated in 1841; and 11 years later the Bible House was opened at Astor Place, 3d and 4th avenues, where the work of printing, publishing and carrying on the distribution of Bibles, Testaments and parts thereof was proceeded with much as in England. The Society now has one of the most complete printing plants in the United States. The Association is managed by a board of 36 laymen, one-fourth of whom are elected every year. All the publications of the American Bible Society are sold at cost, under cost, or given away and vast quantities of these have been scattered broadcast over the United States in 84 languages. The energy of the American Bible Society also aims to reach out to all peoples, races and countries of the world. See AMERICAN BIBLE SOCIETY, THE.

With the growth of American foreign missions the work of the Society in foreign lands has increased enormously until in 1916 it issued almost 5,053,406 copies for foreign distribution. Since its establishment it has issued 71,536,305 copies at home and 46,151,286 abroad. This is an average well over 1,000,000 a year, for every year of its existence. The publications of the Society are issued in over 150 distinct languages, and this number is being yearly added to. Not all the printing and publishing of the Bible Society is done in New York, considerable of it being issued from branch establishments in various foreign countries, where the facilities for accurate work are greater than in America.

The American and Foreign Bible Society and the American Bible Union are two Baptist Bible societies which are very active in the printing and distribution of Bibles and the carrying on of Biblical propaganda and missionary work. The publication and other work of these two societies is now united and carried on by the American Baptist Publication Society.

**BIBLE STATISTICS,** an interesting compilation, said to be the fruits of three years' labor by the indefatigable Dr. Horne, and given by him in his introduction to the study of the Scriptures. The basis is an old English Bible of the King James version.

**Old Testament.**— Number of books, 39; chapters, 929; verses, 23,214; words, 593,493; letters, 2,728,100.

**New Testament.**— Number of books, 27; chapters, 260; verses, 7,959; words, 181,253; letters, 838,380.

**The Bible.**— Total number of books, 66; chapters, 1,189; verses, 31,173; words, 773,746; letters, 3,566,480.

**Apocrypha.**— Number of books, 14; chapters, 184; verses, 6,031; words, 125,185.

**Old Testament.**— The middle book of the Old Testament is Proverbs. The middle chapter is Job xxix. The middle verse is 2 Chronicles xx, between verses 17 and 18. The shortest book is Obadiah. The shortest verse is 1 Chronicles i, 25. The word "and" occurs 35,543 times. Ezra vii, 21 contains all the letters of our alphabet. The word "Selah" occurs 73 times and only in the poetical books. 2 Kings xix and Isaiah xxxvii are alike. The book of Esther does not contain the words God or Lord. The last two verses of 2 Chronicles and the opening verses of the book of Ezra are alike. Ezra ii and Nehemiah vii are alike. There are nearly 30 books mentioned, but not found in the Bible, consisting of civil records and other ancient writings now nearly all lost. About 26 of these are alluded to in the Old Testament.

**New Testament.**— The middle book is 2 Thessalonians. The middle chapter is between Romans xiii and xiv. The middle verse is Acts xvii, 17. The smallest book is 2 John. The smallest verse is John xi, 35. The word "and" occurs 10,684 times. The name Jesus occurs nearly 700 times in the Gospels and Acts, and in the Epistles less than 70 times. The name Christ alone occurs about 60 times in the Gospels and Acts, and about 240 times in the Epistles and Revelation. The term Jesus Christ occurs 5 times in the Gospels.

**The Bible.**— The middle book is Micah. The middle (and smallest) chapter is Psalm cxvii. The middle verse is Psalm cxviii, 8. The middle line is 2 Chronicles iv, 16; the largest book is that of the Psalms; the largest chapter is Psalm cxix. The word Jehovah (or Lord) occurs 6,855 times. The word "and" occurs 46,227 times. The number of authors of the Bible is 50. The Bible was not until modern times divided into chapters and verses. The division of chapters has been attributed to Lanfranc, archbishop of Canterbury, in the reign of William I; but the real author of this division was Cardinal Hugo de Sancto-Caro, about 1236. The number of languages on earth is estimated at 3,000; the Bible or parts of it have been rendered into

over 450 languages and dialects together. The first English translation complete of the Bible was by Wyclif in 1382. The first American edition was printed in Boston in 1752.

**BIBLIA PAUPERUM** (Bible of the poor), the name for block books common in the Middle Ages, and consisting of a number of rude pictures of Biblical subjects with short explanatory Latin text accompanying each picture. A similar work, but more extended and with rhymed text, was the 'Speculum Humanæ Salvationis' or 'Mirror of Human Salvation.' Prior to the Reformation these two books were much used by the preaching monks, and as such orders as the Franciscans, Carthusians, etc., were styled 'Pauperes Christi,' the first named book, so popular with them, came to be known, therefore, as the 'Biblia Pauperum.' Many manuscripts of these works have been preserved in different languages. The 'Biblia' was one of the first books printed in Germany and the Netherlands both from blocks and from types. The chief proof of the discovery of printing in Haarlem is derived from early impressions of the 'Biblia' and 'Speculum.' The 'Biblia Pauperum' has been reprinted in facsimile several times. There is an edition by Unwin, with a preface by Dean Stanley issued in London in 1884.

**BIBLIOGRAPHY.** A leading contribution in 'The Papers of the Bibliographical Society of America' (Vol. X, No. 4, October 1916), supplies the observation that may very well stand at the beginning of a study of this subject. Mr. Feipel writes that "bibliography, or the compilation of bibliographies, is one of the most important branches of bibliology, or the science of books. It is the chief source of information for seekers after book knowledge, and is as varied in its resources as the questions [brought] to it are multifarious." That elastic statement makes room, as we shall show, for the most complete, though brief, characterization — which he gives afterward — of the art or science of bibliography as it is understood in our own times.

But, desiring for our present purpose a more explicit introductory statement, we turn to a definition that seems to us admirable — the one put forward by James Duff Brown in 'A Manual of Practical Bibliography' (London and New York 1906, pp. 3, 4). "For the purpose of this book," Mr. Brown writes, "the definition of bibliography as the science which treats of the description, cataloguing and preservation of books is ample. Within these limits are included practically everything which relates to the externals and registration of books, without trespassing on the province of criticism, historical typography, librarianship, palæography, or any other special department which deals more particularly with the archæology, qualities, and circulation of books. A sharp distinction must be drawn between bibliography and librarianship, which are too often confounded. The former is the science which relates to the history, materials, and description of books in general. The latter is concerned chiefly with the collection, preservation, classification, and making publicly available the books in a particular collection. The one is universal, and considers the personal history of all books; the other is restricted to the elucidation and distribution of the comparatively small collection which forms a library or mere selection of books." The same writer holds that "for bibliographical purposes it does not matter whether a book has commanded a fabulous price in an auction saleroom or whether it is a pamphlet of yesterday dealing with some unimportant local controversy. The business of bibliography," he asserts, "is to take heed of *all* publications, old or new, great or small, cheap or dear, and to describe, and catalogue, and index them in such a clear and sufficient manner that the whole literature of the world on any given subject, or by any given author, shall be placed at the service of the humblest inquirer. This," he admits, "may seem an unattainable ideal, but it has the practical advantage of being something definite at which to aim."

Ripe scholarship, however, does not invariably or unhesitatingly go quite to that extreme. Mr. Wilberforce Eames, for example, — the distinguished bibliographer of The New York Public Library, who is devoting a part of his time to the completion of Sabin's 'Dictionary of Books Relating to America' — is not averse to a more promptly utilitarian practice in some portions of the wide bibliographic field; and a discriminating signification may, we also think, quite properly be added to the definition of the word bibliography. To him it seems right that, in some instances at least, lists of books for common use should be lists of carefully *selected* books. The service that such lists rendor is to guide the reader to works of positive value, instead of sending him perhaps on a fool's errand in quest of a volume that may be difficult to procure simply because it never was thoroughly well worth the reading. And this eminent collector and scholar thinks that it is sometimes helpful to add, after the more strictly bibliographic data, brief literary notes giving a synoptical view of the contents together with a general impression of the character of the listed works.

The interest in this science has never been so widespread and so systematically active as in recent years. In all the leading countries of the world we now find bibliographical societies; and their publications, as well as the periodicals devoted to book and library questions, or giving to these matters special prominence, bear testimony to a general and genuine public interest in the subject. "As to the practical value of a knowledge of bibliography," Mr. Feipel says, "there can indeed be little room for doubt"; and he quotes from the J. D. Brown 'Manual' as follows: "In every possible avenue of research or inquiry, bibliography plays an important part. An acquaintance with bibliographical writings, conjoined with access to the best examples, is a kind of master-key which will unlock the stores of knowledge of all ages, and, when used with intelligence, has the power of opening up sources of information which might otherwise be unsuspected or neglected." When we realize that bibliography assists the student to such an extent, we must also realize that to the librarian, who is consulted by all sorts of students in regard to the actual or possible provision of books, it is wholly indispensable

The etymology of the word may afford some explanation of a tendency, observed in certain quarters, to revert, little by little, to the older meaning of *βιβλιογραφία* which, in post-classical Greek, was used, says Mr. Feipel, "to mean the writing of books; and, as late as 1761, in Fenning's 'English Dictionary,' a bibliographer is defined as 'one who writes or copies books.' The transition from the meaning 'a writing *of* books' to that of 'a writing *about* books' was accomplished in France in the 18th century. An ideal of bibliography—an ideal which, it is needless to say, will never be achieved, but which may be closely approximated—is the description, in minute detail, of all the books of the world." Bibliography may, according to the views of this writer, be regarded as, first, the art of discovering and imparting to others information about books; second, the great mass of literature containing such information; third, a compilation of book information concerning a particular thing, person, place, period, etc. "The relation existing between these various connotations is that of means and end—the first constituting the means by which the last two are produced. It follows, therefore, that the perfection of the art of bibliography consists in adapting the means to the end in the most satisfactory manner possible, and in order to do this a thorough study of the principles underlying the art is essential."

Again, if we have in mind especially the utilitarian aspects of the several kinds of bibliographic work (as it is eminently proper to do), we may distinguish and discriminate the four classes: historical, eclectic, commercial and inventorial. Of these, "the first two are essentially cultural and altruistic in their appeal, while the latter two are practised primarily for the benefit of the practitioner"—as the following differentiation clearly shows: Works of the class first mentioned serve primarily the needs of book-collectors and of the students of the art of printing; those of the class termed eclectic are mainly directed toward the appraisal of the subject matter contained in books, with a view to determining their relative values for purposes of study or recreation. On the other hand, commercial bibliography serves as an indispensable medium of exchange of books between bookseller and book buyer, and works of the class last mentioned, the inventorial, are prepared by or for the owners of books, manuscripts, etc., for the sake of registering such possessions as may be called literary, in the widest sense of that word. The aims of those who are especially active in the field of historical bibliography may be summarized as follows: (1) tracing the origin of books, (2) describing their form and contents, (3) recording the events connected with their "careers," so to speak. In other words, historical bibliography deals with books in a manner resembling that in which history deals with nations or biography and genealogy deal with persons. "When properly executed, historical bibliography not only supplies information about various books but also reflects the state of civilization of the eras to which the books belong"—its material comprising both primary and secondary sources. "Primary sources constitute the bulk of contemporary historical bibliography, while the secondary sources constitute the great body of antiquarian book knowledge"—a subdivision that will be the theme of the next paragraph. "The primary sources are to be found in the private and public documents of the persons and institutions concerned in the production of books. They comprise journals and correspondence of authors and their friends, and subsequently the correspondence and documents exchanged between authors and publishers. Then follow, if the book is published, advertisements and announcements, including those carried by the book itself and such as appear elsewhere. These are finally supplemented by reviews and news items in the journals of the day. If the book continues to live in the minds of the people for any length of time, contemporary records of the book are apt to multiply indefinitely, and bibliographical lore is correspondingly increased. The aggregate of the foregoing constitutes the storehouse from which succeeding ages must derive their bibliographical information, and without which antiquarian bibliography would be an impossibility."

Now, the aim of those literary workers who devote themselves to antiquarian bibliography is to construct authoritative descriptions and accounts of the books of former times; and here the varieties are found to range from extensive histories of the literature of a nation to a brief paragraph throwing additional light on a single book or on a single phase of its history. The essential features of this kind of bibliography are (1) the comparative antiquity of the book or books concerning which information is being imparted, and (2) the fact that this information is derived from acknowledged authoritative sources.

A few words may be added in regard to the eclectic, the commercial and the inventorial divisions or classes. Of these three, the first is regarded as peculiarly the province of the educator, since it strives to suppress the bad and to advance the good; and essential requirements for the proper practice thereof are, of course, impartiality and sound judgment. The second is referred to as a phase of salesmanship, or as advertising ability applied to the sale of books. The third—inventorial bibliography—is requisitioned wherever a valuable collection of books is deposited, and exemplifies the application of accounting methods to books considered as personal property.

We shall now consider in turn the leading characteristics of *Subject* and *Class Bibliographies*, of *National Bibliographies*, of *Bibliographical Encyclopedias*, of *Handbooks of Literary Curiosities*, and of *Bibliographies of Bibliographies;* and for the reader's convenience a number of titles of representative works will be included.

A large place in bibliographical literature is held by the bibliographies of special subjects, of literary forms and of classes of books; and it has been well said that such bibliographies are, to the literatures of their special fields, what an index is to a book—if the index chosen for comparison be decidedly ample. They show the extent and character of their respective literatures; they assemble and make

readily accessible the scattered fragments of book knowledge. But obviously the resemblance to an index ceases whenever they become markedly selective and designed to serve a didactic purpose. Guides to the best books in some chosen field, outlines of courses of study and library bulletins of various kinds are given as representatives of the bulk of didactic work among subject and class bibliographies. "Of these, manuals and textbooks of literature are especially adapted to the narrative form. Other varieties usually take the catalogue form." An example of the latter may be studied in the 'Catalogue of the A. L. A. Library' (Washington 1905); and the wide range of the subjects of other bibliographical works may be at least suggested by the following list: Acland, A. H. D., 'Guide to the Choice of Books' (London 1891); Baker, E. A., 'Descriptive Guide to the Best Fiction' (London, 1903); Banner, J. C., 'Bibliography of Clays and the Ceramic Arts'; Borchard, E. M., 'The Bibliography of International Law and of Continental Law'; Bowker, R. R., and Iles, G., 'Reader's Guide in Economic and Political Science' (New York 1891); Brockett, P., 'Bibliography of Aëronautics'; Gregory, J., 'Catalogue of Early Book on Music'; Iles, G., *ed.*, 'Annotated Bibliography of Fine Art: Paintings, Sculpture, Architecture, Arts of Decoration and Illustration, by Russell Sturgis, and Music by H. E. Krehbiel' (Boston 1897); Johnston, R. H., 'Railway Economics: A Collective Catalogue of Books in Fourteen American Libraries'; Larned, J. N., *ed.*, 'The Literature of American History: A Bibliographical Guide' (Boston 1902); Leypoldt, A. H., and Iles, G., 'List of Books for Girls and Women and Their Clubs' (Boston 1895); Nield, J., 'Guide to the Best Historical Novels and Tales' (London 1904); Monroe, P., 'Bibliographies of Education' (in 'Cyclopedia of Education,' New York 1914); Perkins, F. B., and Jones, L. E., 'The Best Reading' (four series, Boston 1872, 1875, 1886, 1895); Sargent, J. F., 'Reading for the Young: A Classified and Annotated Catalog' (Boston 1890 and supplement 1896).

National bibliographies are very numerous, but commonly either incomplete or out of date. Among those mentioned by Mr. Feipel are Lowndes' 'Bibliographer's Manual of English Literature' (originally published in 1834, but now best known in the revised edition, London 1857–64); the 'Bibliotheca Britannica,' complied by Robert Watt and published at Edinburgh in 1824; Sabin's 'Dictionary of Books Relating to America' (in 20 vols., New York 1867–92), to which we have already referred; and Roorbach's 'Bibliotheca Americana' (New York 1849–61). Continental nations of Europe have produced, among many other works of this order, the following: Brunn, C. V., 'Bibliotheca Danica' (3 vols., Copenhagen 1872–96); Haeghen, F. Van der, 'Bibliotheca Belgica' (Ghent 1879–98); Heinsius, W., 'Allgemeines Bücher-Lexicon' (19 vols., Leipzig 1812–94); Hidalgo, D., 'Diccionario general de bibliografia española' (7 vols., Madrid 1862–81); Linnström, H., 'Svenskt Boklexikon' (2 vols., Stockholm 1867–84); Pattersen, H., 'Norsk Boglexikon' (Christiania 1899, in progress); Quérard, J. M., 'La France littéraire' (12 vols., Paris 1827–64); Silva, J. F. da, 'Diccionario bibliografico portuguez' (16 vols., 1858–93); Thieme, H. P., 'Guide Bibliographique de la Littérature Française de 1800 à 1906' (Paris 1907).

Bibliographical encyclopedias, or universal reference-works of book information, should, if the promise of the title were fulfilled, contain standard descriptions of all books of literary, historical or typographical interest, not only as they first issued from the press but also as they subsequently appeared in all the variant editions; but in very few instances has any approach been made to the realization of that ideal in the past, and at the present time the number of such standard works is very small, owing partly to the greater and more accurate detail now demanded, and partly to the absence of any sufficiently extensive or quite adequate system of co-operation among libraries. The nearest approach to such a work is the 'Catalogue of Printed Books in the British Museum,' which was begun in 1881, and, although completed as far as the original alphabet is concerned, receives additions continuously. In general character and plan somewhat closely resembling the British Museum catalogue, that of the 'Bibliothèque Nationale' of Paris is still in course of preparation. Georgi's 'Allgemeines Europäisches Bücher-Lexicon,' in 11 volumes, was published at Leipzig in 1742–58. Especially noteworthy as a bibliography of the best and rarest editions of books is J. C. Brunet's 'Manuel du Libraire,' the original edition of which was published in 1810. Its 5th edition (Paris 1860–65) was issued in six volumes, and two supplementary volumes appeared in 1878–80. We mention also the 'Trésor de Livres Rares' by J. G. T. Graesse (7 vols., Dresden 1859–69) and Santander's 'Dictionnaire Bibliographique' (Brussels 1805–07).

The dictionaries of anonymous and pseudonymous works, the lists of prohibited works, etc., following "the many unexplored or partly explored by-paths of literature," form a not unimportant branch of bibliography, and are usually classified as handbooks of literary curiosities.

In 'Bibliographies of Bibliographies,' by A. G. S. Josephson (2d ed., originally published in the *Bulletin* and concluded in the 'Papers' of the Biographical Society of America), may be found a list of works devoted to the cataloguing of bibliographies on all kinds of subjects. Among these are Peignot's 'Répertoire de bibliographies spéciales, curieuses et instructives' (Paris 1810); Petzholdt's 'Bibliotheca Bibliographica' (Leipzig 1866); Stein's 'Manuel de bibliographie générale' (Paris 1898), and Vallée's 'Bibliographie des Bibliographies' (Paris 1883–87).

The Chief Bibliographer of the Library of Congress, Mr. H. H. B. Meyer, calls special attention to the value of such publications as 'The Readers' Guide to Periodical Literature' and its supplement, to 'The Cumulative Book Index,' 'The Index of Legal Periodicals,' the 'Magazine Index' and the 'Engineering Index.' Every student of bibliography is glad to acknowledge his obligations also to the bibliographical periodicals, "bibliographical literature in magazine form, constituting a great storehouse of book information"; to the notices

and criticisms of new books in the publications of a general and popular character; and to those "inventories of particular collections of books," the printed catalogues of libraries large and small, public and private.

In regard to the compilation of bibliographies, Mr. Feipel writes that the various bibliographic details fall into the more or less well-defined groups or categories: authorship, title, subject, literary form, place and date of publication, size, binding, price, typography, number of copies printed, edition, etc.; and upon the scope and aim of the particular piece of bibliographic work depends the decision to omit or to include any of these details. Naturally the perfection of the work when completed will be found to depend in great measure upon the good judgment manifested in such careful selection of the items. Moreover, good judgment must be shown in deciding whether to cast the bibliography in the narrative form or the catalogue form, the choice depending — in this matter also — upon the object to be attained and the scope of the work. The narrative form is "particularly adapted to treatises intended to be read as a whole, while the catalogue form is better suited for occasional or particular reference. In either case, a logical *arrangement* of the subject-matter is essential for proper presentation and consultation. In short, the ideal of bibliographical exposition is that which supplies the greatest number of wants with the least expense of time and effort on the part of the user. . . . Scholarly bibliography usually involves a great deal of research on the part of the compiler; and a thorough knowledge of bibliographical sources and authorities, as well as of general reference books, is of prime importance."

In conclusion we refer once more to the all-important consideration of the utility of this art; and shall treat briefly of the requirements of librarians, of private book collectors and of students — the three chief groups of persons who profit by bibliography most directly.

The librarian considers both the contents and the externals of the books he collects, for his aim is naturally to supply the wants of all comers. Theoretically, it is his privilege to strive to have his library contain books on all topics and representative works — or even all the work — of all good writers; "but since this is an unattainable end as well as an ideal of questionable worth, he works up to it as reasonably as he sees fit and as nearly as his resources allow. And for his work of buying, making sure that the books are complete and of the best editions, cataloguing them, and filling up gaps in the collection, bibliography is without doubt his most essential tool." Now, the private book collector, not being obliged to take account of the tastes and requirements of other people, but on the contrary devoting his leisure to the quest of such books as he himself cares for, very often appraises his acquisitions "not according to their use as reading-matter, but according to their origin, their history and their scarcity. They are prized not so much for what they contain as for what they are, namely, specimens of an art that can never be replaced." For him, then, bibliography's utility is measured by the correctness of its replies to these or similar questions: What books exist? What constitutes a complete copy of each? Which are rare and which abundant? But the student's wants are unquestionably those that have received most solicitous attention; and the fact has been clearly recognized that bibliography serves him far less as a technical description of books, far more as a guide to literature: "It is a guide to the contents of books, rather than to their external peculiarities, that he requires." See BIBLIOMANIA.

MARRION WILCOX.

**BIBLIOMANCY**, divination performed by means of the Bible, also called *sortes biblicæ*, or *sortes sanctorum*. It consisted in taking passages at hazard, and drawing indications thence concerning things future. It was much used at the consecration of bishops. It was a practice adopted from the heathens, who drew the same kind of prognostications from the works of Homer and Virgil. In 456 the Council of Vannes condemned all who practised this art to be cast out of the communion of the Church; as did the councils of Agde in 506 and Auxerre. But in the 12th century we find it employed as a mode of detecting heretics. In the Gallican Church it was long practised in the election of bishops; children being employed, on behalf of each candidate, to draw slips of paper with texts on them and that which was thought most favorable decided the choice. A similar mode was pursued at the installation of abbots and the reception of canons; and this custom is said to have continued in the cathedrals of Ypres, Saint Omer and Boulogne, as late as the year 1744. In the Greek Church we read of the prevalence of this custom as early as the consecration of Athanasius, on whose behalf the presiding prelate, Caracalla, archbishop of Nicomedia, opened the Gospels at the words, "For the devil and his angels" (Matt. xxv, 41). The bishop of Nice first saw them and adroitly turned over the leaf to another verse, which was instantly read aloud: "The birds of the air came and lodged in the branches thereof" (Matt. xiii, 32). But this passage appearing irrelevant to the ceremony, the first became gradually known, and the Church of Constantinople was violently agitated by the most fatal divisions during the patriarchate. It has persisted in a measure in modern times and devout persons have used this means of seeking guidance. Tennyson makes use of the custom in 'Enoch Arden.'

**BIBLIOMANIA** ("book-madness"), a word formed from the Greek and signifying a passion for possessing rare or curious books. The true bibliomanist is determined in the purchase of books less by the value of their contents than by certain accidental circumstances attending them. To be valuable in his eyes they must belong to particular classes, be made of singular materials or have something remarkable in their history. Some books acquire the character of belonging to particular classes from treating of a particular subject; others from something peculiar in their mechanical execution (as the omission of the word "not" in the seventh commandment, which gives the Wicked Bible its name), or from the circumstance of having issued from a press of uncommon eminence, or because they once belonged to the library of an

eminent man. But there are certain fashions in bibliomania and books much sought at one time may at another be comparatively neglected. Some collections of books may possess or have possessed much intrinsic value; such as collections of the various early editions of the Bible; collections of editions of single classics (for example, those of Horace and Cicero); the editions of the Greek and Latin classics *in usum Delphini* and *cum notis variorum;* the editions of the Italian classics printed by the Academy *della Crusca;* works printed by the Elzevirs and by Aldus; the classics published by Maittaire or Foulis; and the celebrated Bipont editions, with others. It perhaps was more customary in former times than at present to make collections of books which have something remarkable in their history (for example, books which have become very scarce and such as have been prohibited), yet various scarce books are highly prized on account of nothing but their rarity, the original (1786) Kilmarnock edition of Burns' Poems, for instance. First editions may be ranked in the same class. Books distinguished for remarkable mutilations have also been eagerly sought for. Those which appeared in the infancy of typography called *incunabula,* from the Latin *cunæ,* a cradle, and among them the first editions (*editiones principes*) of the ancient classics, are still in general request. An enormous price is frequently given also for splendid proof impressions of copperplate engravings and for colored impressions, for works adorned with miniatures and illuminated initial letters; likewise for such as are printed upon vellum. Works printed upon paper of uncommon materials or various substitutes for paper (asbestos, for instance), have been much sought after; likewise those printed upon colored paper. Other books in high esteem among bibliomanists are those which are printed on large paper, with very wide margins. In English advertisements of rare books some one is often mentioned as particularly valuable on account of its being "a tall copy". If the leaves happen to be uncut the value of the copy is much enhanced. Other works highly valued by bibliomanists are those which are printed with letters of gold or silver or ink of singular color; for example: (1) 'Fasti Napoleonei' (Paris 1804, 4to), a copy on blue vellum paper with golden letters; (2) 'Magna Charta' (London 1816, fol.), three copies upon purple-colored vellum, with golden letters.

Bibliomania often extends to the binding. In France the bindings of Derome, Padeloup and Bozerian are highly valued; in England those of Charles Lewis and Roger Payne, among 18th century binders; while Hayday, Rivière, Bedford and Zaehnsdorf may be mentioned as among the notable craftsmen of the 19th. Even the edges of books are often adorned with fine paintings. Many devices have been adopted to give a fictitious value to bindings. Jeffery, a London bookseller, had Fox's 'History of King James II' bound in fox-skin, in allusion to the name of the author; and the famous English bibliomanist, Askew, even had a book bound in human skin. In the library of the castle of Königsberg are 20 books bound in silver (commonly called the silver library). These are richly adorned with large and beautifully engraved gold plates in the middle and on the corners. To the exterior decoration of books belongs the bordering of the pages with single or double lines, drawn with the pen (*exemplaire réglé*), commonly of red color — a custom which we find adopted in the early age of printing in the works printed by Stephens. The custom of coloring engravings has generally been dropped, except in cases where the subject particularly requires it (for instance, in works on natural history or the costumes of different nations), because the colors conceal the delicacy of the engraving.

Other means of idle competition being almost all exhausted, a new method of gratifying the bibliomanist taste was adopted, that of enriching works by the addition of engravings,— illustrative indeed of the text of the book, but not particularly called for,— and of preparing only single copies. Books are often mutilated in this way to enrich some other book. Such "grangerized" copies have long been well known.

Among recent books valued as specimens of typography are some of those that issued from the Kelmscott Press of the late William Morris. Bibliomania, which flourished first in Holland (the seat likewise of the tulipomania) toward the end of the 17th century, has prevailed in England to a much greater extent than in France, Italy or Germany. The modern bibliomania is very different from the spirit which led to the purchase of books in the Middle Ages at prices which appear to us enormous. External decorations, it is true, were then held in high esteem; but the main reason of the great sums then paid for books was their scarcity and the difficulty of procuring perfect copies before the invention of the art of printing. Consult Dibdin, 'Bibliomania' (London 1811); Fitzgerald, 'The Book Fancier' (ib. 1886); Lary, 'The Library' (1886); Burton, 'The Book Hunter' (New York 1882); Field, 'The Love Affairs of a Bibliomaniac' (ib. 1896); Ferguson, 'Some Aspects of Bibliography' (Edinburgh 1900); Lang, A., 'The Library' (London 1881); Merryweather, 'Bibliomania of the Middle Ages' (London 1849, reprint, 1900); Pollard, 'Fine Books' (New York 1912); Fletcher, 'An Index to General Literature' (Boston 1901); Gusterie, 'Guide to Periodical Literature' (2 vols., Minneapolis 1910); Poole, 'Index to Periodical Literature,' covering the period after 1802.

**BIBRA,** bē-bra, **Ernst, Baron von,** German naturalist and writer: b. Schwebheim, Bavaria, 9 June 1806; d. Nüremberg, 5 June 1878. Being left an orphan with a large fortune at an early age, he devoted himself to physical science, and published various works that brought his name before the public. He studied law at the University of Würzburg. He traveled in South America, taking home with him important natural history and ethnological collections. He wrote several works on chemistry, including 'Chemische Untersuchungen über die Knochen und Zähne der Menschen und der Wirbeltiere' (Schweinfurt 1844); 'Chemische Fragmente über die Leber und die Galle' (Brunswick 1849); 'Die Bronzen und Kupferlegierungen der alten und ältesten Völker' (Erlangen 1869). Among his numerous works

of travel and fiction are 'Travels in South America' (2 vols., Mannheim 1854); 'Memories of South America' (3 vols., Leipzig 1861); 'Sketches of Travel and Novels'; 'In South America and Europe' (2 vols., Jena 1874).

**BIBULUS, Lucius Calpurnius,** Roman politician: d. near Corcyra, Greece, 48 B.C. His wife was Porcia, daughter of Cato of Utica. In 45 B.C. Porcia married M. Junius Brutus and thus young Bibulus was brought up in the home of the future murderer of Cæsar. He was consul with Julius Cæsar in 59 B.C., which office he acquired through the influence of the aristocratic party. After his opposition to Cæsar's Agrarian Law had failed, he secluded himself in his house, whence he issued edicts against the measures of Cæsar. In 49 B.C. Pompey appointed him commander of the fleet in the Roman Sea. Bibulus took part in the battle of Philippi and was made prisoner by Antony. The latter afterward made him his legate in Syria. He composed a little volume of 'Memoirs' of Brutus. It was extant in Plutarch's time but has since been lost.

**BICAMERAL SYSTEM,** or two-chambered system, the universal form of the State legislature. The upper house is invariably called the senate and the lower house is usually termed the assembly or house of representatives or house of delegates, the former differing from the latter chiefly in number of members, in special duties and in greater length of tenure, while in Congress and some of the States there is also a difference in the systems of representation in the two houses. The bicameral system was in vogue in England when America was settled but local needs as well as a desire to imitate the English system led the colonists to adopt the system. When the Constitution was framed in 1787, the members of the Convention decided to retain the system since the powers of the legislature were increased and the members believed in a government of checks and balances. Without question the system has tended to minimize the evil of over-legislation by giving opportunity for sober second thought on proposed legislation, though it has resulted, too, in friction and unnecessary delays with divided responsibility for compromised legislation. See CONGRESS; ASSEMBLY, LEGISLATIVE; SENATE; HOUSE OF REPRESENTATIVES. Consult Bryce, James, 'American Commonwealth' (4th ed., 1910); Reinsch, Paul S., 'American Legislatures and Legislative Methods' (1907); Wilson, Woodrow, 'Congressional Government' (1885).

**BICANERE,** bīk-ä'nēr, India, a town, capital of a principality of the same name, 240 miles west by south from Delhi. With its battlemented walls and large citadel, both flanked with round towers, and its temples, one of which rises to a great height, it presents a magnificent appearance to the traveler approaching it through the desolate tract of country in which it stands; but a nearer inspection dispels the illusion, and the greater part of the houses are found to be hovels of mud, painted red. Water is obtained from wells.

**BICARBONATE.** See CARBON.

**BICCI, Ersilio,** bē'chē, ār-sēl'yō, Italian poet: b. 1845. He studied in Florence, and became professor of Italian literature in the Licei Dante and Toscanelli of that city. His best composition is in the collection styled 'New Verses.'

**BICE,** bīce, or **BISE,** the name of two colors used in painting, one blue, the other green, and both native carbonates of copper, though inferior kinds are also prepared artificially. As other artificial pigments are often so called, the word is now of doubtful value and has become almost obsolete. Blue bice is known as mountain blue or ongaro, and green bice as Hungarian green, verde de Spagna, etc.

**BICEPS** (*biceps flexor cubiti*), the principal flexor muscle of the arm, the muscle popularly shown as evidence of muscular development. At its upper end it consists of two parts, one being attached to the coracoid process of the scapula, and the other to the margin of the glenoid fossa, about the joint. This latter, the long head, passes over the head of the humerus as a tendon and unites with the short head to form the belly of the muscle. The lower end of the biceps is inserted for the greater part to the radius, and a smaller tendonous expansion is inserted in the fascia of the forearm. The action of the biceps is to bring the forearm to the arm and to turn the inturned hand outward.

**BICETRE,** bē-sātr, France, village a little to the southwest of Paris, with a famous hospital for old men in indigent circumstances, and an asylum for lunatics, together forming one vast establishment, containing over 2,700 beds. This establishment was originally founded by Louis IX as a Carthusian monastery, became later a castle, which was demolished in 1632, after being long in a ruinous state, and was restored by Louis XIII, and destined as a retreat for infirm officers and soldiers. When Louis XIV afterward erected the great Hôtel Royal des Invalides, Bicêtre became a general hospital, and it continued as such down to the Revolution, and contained also a house of correction. The establishment was then entirely altered and converted to its present use. The poor persons admitted must be at least 70 years of age or incapacitated by some incurable disease from earning a livelihood. The lunatics are such as belong to the department of the Seine. They are attended to with the greatest care and fabricate neat little articles of wood and bone, known in France by the name of «Bicêtre work.»

**BICHAT,** bē'shā, **Marie François Xavier,** French physician: b. Thoirette, department of Jura, 14 Nov. 1771; d. 22 July 1802. His father, a physician, early initiated him into the study of medicine, which the young Bichat prosecuted at Lyons and Paris, where he studied under the direction of Desault (q.v.), who treated him as a son. On the latter's death, Bichat superintended the publication of his surgical works, and in 1791 began to lecture upon anatomy in connection with experimental physiology and surgery. From this period, amidst the pressing calls of an extensive practice, he employed himself in preparing those works which spread his reputation through Europe and America, and which had the most beneficial influence upon medical science generally. In 1800 appeared his 'Treatise on the Membranes,' which passed through numerous editions, and immediately after publication was translated into almost all

European languages, and 'Researches Concerning Life and Death,' followed, the next year, by his 'General Anatomy' (4 vols., 8vo) — a complete code of anatomy, physiology and medicine, which was translated into English by Dr. G. Hayward, and published in 3 vols. 8vo. In 1800 he was appointed physician of the Hôtel-Dieu, in Paris, and with the energy characteristic of true genius began his labors in pathological anatomy. In a single winter he opened no less than 600 bodies. He had likewise conceived the plan of a great work upon pathology and therapeutics; and immediately upon commencing his duties as physician to the Hôtel-Dieu he began his researches in therapeutics by experiments upon the effects of simple medicines. In the midst of his activity and usefulness he was cut off by a malignant fever, probably the consequence of his numerous dissections. His friend and physician, Corvisart, wrote to Napoleon in these words: "Bichat has just fallen upon a field of battle which counts more than one victim; no one has done so much, or done it so well, in so short a time." He was the creator of general anatomy, or of the doctrine of the identity of the tissues of the different organs, which is the fundamental principle of modern medicine.

**BICHIR**, bĕ-shēr' one of the African mudfishes (*Polypterus bichir*), which inhabits the upper Nile and its tributaries, and is regarded as the best food-fish of those waters. It may attain the length of four feet, and is one of the few remaining species of the great nearly extinct group *Ganoidea*, and is related to the American gar-pike. It is not truly a mudfish in its habits, though it haunts the deeper holes of the Nile. Its swim-bladder opens ventrally and is double, simulating a pair of lungs in many respects, though the fish cannot live long out of water. See MUD-FISH; REED-FISH; ICTHYOLOGY.

**BICHLORIDE OF GOLD**, a substance formed by the action of chlorine gas upon dry metallic gold that has been previously thrown down in the form of an impalpable powder, by chemical means. Some authorities formerly asserted that the substance so formed is a true chemical compound, having the formula $AuCl_3$: however, it is a mere mixture of metallic gold and the well-known trichloride, $AuCl_3$.

**BICKELL, Gustav Wilhelm Hugo**, German theologian and Orientalist, son of J. W. Bickell (q.v.): b. Cassel, 7 July 1838; d. Vienna, 15 Jan. 1906. At the age of 24 he became tutor of Semitic and Indo-Germanic philology at Marburg. He became a convert to Roman Catholicism in 1865, was ordained priest in 1867 and appointed professor of Oriental languages at Münster. In 1874 he accepted a similar post at Innsbruck, and finally settled in Vienna in 1891. Bickell wrote a great number of theological treatises, a Hebrew grammar and made several translations; also 'De indole ac ratione versionis Alexandrinæ in interpretando libro Job' (1862); 'Grounds of the Infallibility of the Head of the Church' (1870); 'Mass and Pasha' (1872); 'Metrices biblicæ regulæ exemplis illustratæ' (1879); 'Synodi Brixinenses saeculi XV' (1880); 'Hebrew Poetry' (1883); 'A Papyrus Fragment of a non-Canonical Gospel' (1885); 'Selected Writings and Poems of the Syrian Church Fathers.'

**BICKELL, Johann Wilhelm**, German ecclesiastical jurist: b. Marburg 1799; d. Cassel 1848. He became professor of jurisprudence at the age of 25; at 33 he was appointed counsellor of the High Court of Appeal in Cassel and vice-president in 1845. Bickell gave the impetus to the modern development of ecclesiastical law, leading to extended researches among the writings of early authorities. Of his great work, 'History of Ecclesiastical Law' (Giessen 1844), only one volume was completed. Among his other works are 'Corpus juris canonici' (1825); 'De paleis quae in Gratiani decreto inveniuntur' (1827); 'Reform of the Protestant Church Constitution' (1831).

**BICKERSTAFFE, Isaac**, Irish dramatic writer: b. Ireland, about 1735; d. about 1812. At the age of 11 he became page to Lord Chesterfield, lord lieutenant of Ireland. Later he was officer of marines, but was dismissed because of some escapade. In 1772 he was suspected of a capital crime and fled abroad. Little is known of his later life, save that he lived for a time at Saint Malo under an assumed name. He wrote many successful pieces for the stage, some of which, such as the operas of 'Love in a Village' and 'The Padlock,' are still presented. His celebrated comedy of 'The Hypocrite,' adapted from Colley Cibber's 'Nonjuror,' which was again borrowed in its leading incidents from Molière, long retained its place on the stage, with its well-known characters of Mawworm and Dr. Cantwell. The music of many of Bickerstaffe's pieces was composed by Charles Dibdin. Most of his comedies and light musical pieces were produced under the management of Garrick.

**BICKERSTETH, Edward**, English clergyman: b. Kirby Lonsdale, Westmoreland, 19 March 1786; d. 28 Feb. 1850. He was educated in the grammar school of his native town, and became successively a postal official, clerk to a London attorney and flourishing solicitor in Norwich. Influenced by a new and powerful impulse, he began in 1805 to exert himself in promoting the diffusion of the truths of religion among his fellow men. After publishing successfully in 1814 'A Help to the Study of the Scriptures,' he resolved to enter the ministry of the Church of England. The Church Missionary Society wished to send him abroad on a special mission to Africa, and in this view his bishop, dispensing with the usual course of a university education, admitted him to orders in 1815, and a fortnight afterward he was admitted to full orders. Mr. Bickersteth thereupon, with his wife, proceeded to Africa, from which, after accomplishing the objects of his mission, he returned in the following autumn. He filled afterward the office of secretary to the Church Missionary Society with zeal and distinction until 1830, when he became rector of Watton, in Hertfordshire. He was a strong Protestant, warmly evangelical, and an ardent Millenarian. One of the founders of the Evangelical Alliance, he was the author of a series of publications which had an immense circulation, including his famous compilation, 'The Christian Psalmody,' which went through 59

editions in seven years. A collected edition of his works appeared in 1853.

**BICKERSTETH, Edward Henry,** English divine and hymn-writer: b. 25 Jan. 1825; d. London, 16 May 1906. His father was a Church of England clergyman and at the age of 14 he decided to take holy orders. Though not eminently successful in other subjects during his university career, he won the chancellor's medal for English three years in succession — a unique feat. Ordained priest in 1849, Bickersteth held several church livings before he became vicar of Christ Church, Hampstead, in London, where he remained 30 years. Here he established daily services and engaged actively in missionary work. He made journeys through India, Palestine and Japan. Of extremely broad-minded views, he aided and encouraged many church and diocesan societies which lacked the prescribed evangelical sanction. His writings in prose and verse were very numerous. He published in 1866 'Yesterday, To-day and For Ever: a poem in 12 books,' which quickly achieved a world-wide popularity. Nearly 30,000 copies were sold in Great Britain, and twice that number in America. In 1858 he published 'Psalms and Hymns,' based on his father's 'Christian Psalmody.' Some 30 hymns of Bickersteth's own composition are in popular use, the best known being 'Peace, Perfect Peace' (1883) and 'O Brothers, Lift Your Voices.' In 1885 he was appointed dean of Gloucester, and shortly afterward was nominated bishop of Exeter. Besides sermons, charges and poems, he wrote a 'Practical and Expository Commentary on the New Testament' (1864), of which over 40,000 copies were sold. 'The Rock of Ages; or Scripture Testimony to the one Eternal Godhead of the Father and of the Son and of the Holy Ghost' (1859–60); 'The Lord's Table' (1884); 'The Second Death; or the Certainty of Everlasting Punishment' (1869). Consult Aglionby, F. K., 'Life of E. H. Bickersteth' (1907).

**BICKNELL, Ernest Percy,** American public official and social worker: b. near Vincennes, Ind., 23 Feb. 1862. After graduating from Indiana University he became a newspaper reporter in Indianapolis. In 1893 he was appointed secretary of the State board of charities of Indiana, and five years later he became general superintendent of the Chicago bureau of charities. In 1908 he became national director of the American Red Cross Society, whose principal agent he was in San Francisco after the great fire in 1906. He was also active in behalf of this organization in Sicily and Calabria after the earthquake of 1909. In 1914 he was appointed a member of the United States Government Commission sent to Europe to assist Americans stranded in the war zone. He is a member of the executive board of the Boy Scouts of America.

**BICKNELL, George Augustus,** retired rear-admiral of the United States navy: b. Batsto, N. J., 15 May 1846. As a midshipman he saw much active service during the Civil War. At the conclusion of hostilities he entered the Naval Academy, from which he graduated in 1866. During the opening of the Japanese ports of Kobe and Osaka two years later he commanded the marines which maintained order at Yokohama. During the Spanish-American War he commanded the *Niagara,* and during the Boxer uprisings in China in 1899 he was in command of the *Monocacy.* From 1902 until 1904 he was commandant of the Naval Station at Key West, Fla., after which he commanded the battleship *Texas* for two years, flagship of the United States coast squadron. In 1906 he was appointed commandant of the Pensacola and Portsmouth navy yards, which position he retained until 1908, when he was retired, having been promoted to the rank of rear-admiral the year before.

**BICKNELL, Thomas Williams,** American author, educator, historian: b. Barrington, R. I., 6 Sept. 1834. He was educated at Thetford Academy, 1850–53; Amherst, 1853–54; Brown University, 1858–60. He was school teacher and principal, 1860–69; commissioner of education for Rhode Island, 1869–75. He founded the new Normal School, Rhode Island, in 1871. He was the founder, editor and publisher of the *New England Journal of Education, Education* and *Primary Teacher.* He founded the New England Bureau of Education, 1876; was a member of the Rhode Island house of representatives, 1860, and of the Massachusetts house of representatives, 1888–90; cofounder of the town, New England, N. D.; founder (1880) and president (1880–84) of the National Council of Education; president of the American Institute of Instruction, 1877–78; president of the International Sunday School Association, 1884; president of the Rhode Island Citizens' Historical Association since 1904; founder, secretary and registrar of the National Society of Sons and Daughters of the Pilgrims, 1908; founder and secretary Providence Founders Society, 1911. He has published 'Biography of William L. Noyes' (1867); 'Reports as School Commissioner' (1869–75); 'Annals of Barrington, R. I.' (1870); 'The Bicknells' (4 vols., 1880–88); 'John Myles and Toleration' (1888); 'The History of Barrington, R. I.' (1898); 'Barrington in the Revolution' (1898); 'Sowams' (1908); 'Bicknell Family Genealogy' (1913); 'History of the Rhode Island Normal School' (1912); 'The Story of Dr. John Clarke, Founder of Civil and Religious Liberty in Rhode Island, 1638' (1915), and many historical addresses and poems.

**BICYCLE,** a light steel vehicle consisting of two wheels arranged tandem, united by a frame with the rider's seat upon it; propelled by his feet acting on the pedals connected with one of the axles, at present that of the rear wheel; and steered by a handle-bar guiding the direction of the front wheel. As at present constructed the wheels are of equal size; the driving mechanism is usually a chain with the links fitting over a sprocket-wheel, but about one in 25 are chainless, mainly with a shaft and bevel driver; the weight is 23 to 27½ pounds, complete; the frame is of hollow cold-drawn tubing, with brazed joints; the wheels are suspension, with crossed tangent spokes, wooden rims, pneumatic tires and ball bearings. The name dates from about 1865, though first so spelled in a patent of 8 April 1869, and elsewhere called "bysicle," "bicircle," "bicycular velocipede," etc.; but prior to 1870 the form

of the machine was usually called a velocipede, a French name dating from 1779.

The pedomotor itself goes back perhaps to Egyptian and probably at least to classic times, winged figures astride of a stick connecting two wheels being found in the frescoes at Pompeii. In the 17th century it suddenly appears with surprising frequency; there is a picture of a bicycle in a stained-glass window at Stoke Pogis, England; in August 1665, John Evelyn writes in his diary of "a wheele to run races in"; in 1690 a Frenchman named De Sivrac invented a two-wheeled *célérifère* having a horse-shaped wooden body with a saddle, and steered by the rider's feet; in 1693 Ozanam described before the Royal Society a vehicle pedaled by a foot traveler. In 1761 the *Universal Magazine* describes a similar one invented by an Englishman named Ovenden; in August 1769 the *London Magazine* describes "a chaise to go without horses." On 27 July 1779, *Le Journal de Paris* describes a *vélocipède* invented by MM. Blanchard and Magurier, which is merely the *célérifère* with an upright bar to support the hands; this gained considerable vogue. From France and England the idea spread to Germany, which added to it the one idea needed to vivify it. In March 1784 one Ignaz Trexler, of Gratz, Austria, invented a pedomotor credited with the speed of a galloping horse — unquestionably meaning down hill. But the direct progenitor of the modern bicycle was one built in 1816 by Baron Karl von Drais, Freiherr von Sauerbronn (1784–1851), chief forester to the Grand Duke of Baden (to whose memory in 1891 the bicyclers erected a monument at (Karlsruhe), often called "the father of the bicycle." It was designed to aid him in his daily journeys. The whole was of wood; the wheels of equal size, connected by a perch, astride which the rider sat in a saddle, and to the fore end of which was swiveled a fork into which the front wheel was axled; the rider propelled it on level ground or up hill by striking the ground with his feet, and coasted down hill. But the significant feature, the germ of the bicycle, was the pivoting of the front wheel and its steering by a handle-bar; for which there was a stuffed arm-rest on an elevated cross-piece. Drais patented this in Paris, 1816, and claimed that it would go up hill as fast as a man could walk, on a level, after a rain, at six or seven miles an hour, or courier's pace, the same when dry at eight or nine and down hill at a horse's gallop. It excited much attention and was called the "draisine"; and in 1818 one Dennis Johnson patented in England an improved form called the "pedestrian curricle," with adjustable saddle and elbow-rest. Meantime, in June 1819, the curricle had been introduced into the United States and became a craze in Boston, New York, Philadelphia, etc.; and many riding-schools were opened. On 26 June 1819 William K. Clarkson was granted a patent for an "improved velocipede"; but the excitement soon subsided here also.

The real ancestor of our bicycle, the crank-driven velocipede that led straight to better things, arose in France: the honor of the invention is hotly disputed. According to one account it belongs to Ernest Michaux, the son of a Parisian carriage repairer (to whom a monument was erected in 1894); but if so, he did not make it public and it led to nothing, and it is generally accredited as theory, where it belongs as practical result, to Pierre Lallement, a Parisian blacksmith, said to have been, in Michaux's employ. It sprang, in fact, not from Michaux's, if that existed, but from a multicycle invented in 1865 by one Marechal; a five-wheeler, each wheel having an independent axle with cranks, loose pedals and a separate seat; the front was the guide-wheel, but it could be ridden by one or many. In September MM. Woirin and Leconde patented a tricycle, with two smaller rear wheels on the same axle, and a large front one with cranks and loose pedals, the whole connected with a wooden horse-shaped body like De Sivrac's, on whose back the rider sat well over the front wheel; this was the progenitor of the modern tricycle. Lallement, against the judgment of his friends, who thought that keeping one's balance would be impracticable on two wheels tandem, applied the principle thus the same year, learned the art of balancing, and exhibited his machine and his skill at the Paris Exposition of that year; but thought too little of it to patent it. The next year (1866) he came to the United States to look for work, made a velocipede and rode it about New Haven, Conn., and was induced by one James Carroll to patent it with him, which was done 20 November. It had two wooden wheels, the front one slightly the larger, with iron tires; was a front-driver, and the saddle was on a steel spring midway between the wheels. But it was too crude and unpleasurable to attract much notice. In France, however, great improvements were shortly made on it, and in the winter of 1867 it became the sensation of Paris; riding schools sprang up all about, and straps to fasten the machines were part of the equipment of the great places of amusement. This continued till the Franco-German War temporarily destroyed the business, which had developed a large manufacturing interest. Meantime, in England, Edward Gilman in 1866 had patented a rear-driver with a single treadle, and the chain gear had been broached. In 1869 the improved velocipede and the reflex of the French enthusiasm brought it into sudden vogue in the United States, and American inventiveness was turned toward perfecting it: at the time the "boom" burst in 1870 the Patent Office was receiving half a dozen applications for new patents every week. The sport, however, collapsed, with the suddenness of a financial crash, within a single week; thousands of machines, worth $100 to $150 one day, could not be sold at any price the next, and were ultimately disposed of to boys or the poorest classes at nominal prices, or allowed to become old iron; and manufactories crowded with orders had them countermanded in a mass. It was nearly a decade before America took it up again in any general way, and then with a different wheel, the bicycle proper.

Meantime a great development had gone on in England, where the hard, smooth macadam roads and beautiful by-paths for cyclers without disturbing horses made all conditions more favorable. The bicycle under that name was patented 8 April 1869; it had steel rims and solid rubber tires, round or half round. To gain speed the front wheel was

gradually enlarged and the rear reduced to a mere steerer, till the Ordinary was attained in 1871 with a 40- to 48-inch front wheel and 16-inch rear. The front wheel was gradually raised in proportion to the rider's height and skill, and in the early eighties attained 60 and even 64 inches. It still remains the perfection of grace and simplicity in bicycle construction: the motive power being applied direct, and the wheel, with cranks and pedals, forming a solid body. It is also the most exhilarating to ride, given strength and skill.

The Ordinary, however, could not be the bicycle of the future. It was hard to mount, except in favorable spots, and if the rider was dismounted had often to be walked long distances on streets or hillsides; both from this and the great air resistance due to the rider's elevation, it was merely the sport of a few athletic men, mostly young; headers were frequent from the rider's mass centre being directly over that of the large wheel, and liable to be serious from his high seat, though the danger was exaggerated. A safer build was therefore mooted. The first idea was to bring the rider's centre below that of the driving wheel; this could only be accomplished by operating the pedal with some kind of leverage, and a rear-driving safety with lowered front wheel was patented in 1879 by H. T. Lawson of England. A similar type, called the "Bicyclette," followed in 1880. In the same year the "Star," a reversed Ordinary with the small wheel in front, was introduced. A more popular form, which had high racing speed and made new records, was Starley's "Kangaroo" (1883), with diamond frame, independent crankshafts and two chains gearing them to the front wheel, followed in 1884 by Starley's famous and still speedier "Rover," for a long time the popular term for "safeties" of any pattern. Here the cranks and pedals were on a separate axle, connected with the driving-wheel by a single chain which was therefore permanently tight; the seat was far back over the rear wheel, so that headers over the handle-bar were absolutely impossible. The front wheel was about one-fourth larger than the rear; later they were made of practically the same size as now, completing the evolution back to the velocipede, and making its general utility possible. This advent of the "safety" has carried the bicycle into everyday business and the life of every household; carriers, policemen, messengers, etc., find it of great service. The enormous brain-power devoted to its perfection is shown by the fact that in the United States alone 7,573 patents had been granted up to 1900 for cycles and their parts, and probably double that in the world altogether. Of these, only 16 had been issued before 1865, and the great majority were granted after 1890. In 1892 the applications had grown so numerous that a special department of the Patent Office was created for them.

The greatest of all single inventions, and the one which has revolutionized the business and made cycling a delight rather than an exertion, is the pneumatic tire. It was originally invented, not for bicycles, but road wagons, by an English civil engineer named R. W. Thompson, in 1843, and was patented in the United States in 1847; but was allowed to lapse. The first bicycle tires were iron or steel; then a strip of rubber was fastened over the tire; later, a round or half-round piece of solid rubber was cemented or fastened into the hollow of the rim. But in 1889 an Irish veterinary surgeon, Dr. John B. Dunlop, fitted a piece of rubber hose on his son's bicycle; it worked so well that he patented it, not broadly, but for specific details now disused. About the same time P. W. Tillinghast, of Providence, R. I., patented a hollow tire in this country. But even this would have been ineffectual save for the enormous reduction in weight by the use of steel weldless tubing and wire, so that a machine of the incredibly small weight of nine pounds has been used for racing, with a wheel on whose spokes four men can stand without injuring it: these machines are too frail for road use, but even the average roadster does not reach 28 pounds, while in 1873 65 pounds, and even in 1885, 48 was thought fair, and 27 a racing wonder.

The ball-bearing, invented by an Englishman named Bonn, is another epoch-making invention. The earliest bicycle bearing was a plain one with a sleeve, known as the parallel bearing. The friction was so heavy that the roller bearing was substituted, but did not work well; the next was the adjustable cone, which for a time was in universal use. But in all solid-surface bearings the grinding of the sand which worked in made them irregular and rattling after a while, and the layers of gudgeon grease required a steady tax on time for cleaning. In the ball-bearing, the conical axle bears against a row of steel balls in a circle, tangent to the bearing surface and to two other surfaces at right angles, so that the friction is only against three points, and the bearing parts roll over instead of sliding upon each other. The wear of the balls is astonishingly slight, and from the constant change of surface there is little irregularity, and from the small contact points scarcely any making of axle grease.

A fundamental invention was the suspension wheel, of which, in the words of an English patentee of 1826, "the weight they have to carry is suspended from that part of the wheel which happens to be uppermost, instead of being supported, as is usual, by the spokes that happen to be under the axle-tree"—a principle invented by Leonardo da Vinci before 1490, reinvented as above stated, and in France in 1864. Spring seats have abolished the saddle-galling which was one of the worst tortures of the "bone-shaker," and even of the earlier bicycles. The wooden rim takes two and a half pounds off the weight of the machine, but is not used in England, the roads being too wet. The drop-frame for ladies' use is perhaps the most important single advance made on the velocipede, so far as the increase of social pleasure is concerned. The coaster-brake is another important advance. The chain gearing which made the "safety" possible has been noted; later, much ingenuity has been employed to get rid of it, but not with complete satisfaction, the cost being prohibitive to the mass, and the complaint of extra exertion being heard. The two chief devices for chainless machines are the pin-wheel gearing, which works smoothly but lacks durability; and the bevel gear, which is very difficult to cut so that the teeth shall fit

exactly, but is said to increase in both accuracy and ease of driving with use, as the surfaces of the teeth grow to fit each other. In the chain gear the case is the reverse, as the links and rivets wear and dust grinds them off.

In the United States the bicycle did not appear after the collapse of 1870 till the Centennial Exposition of 1876, when some English machines were imported and exhibited. Col. Albert A. Pope of Boston saw them and thought of reviving the business here; went to England to study the industry, brought back some English wheels, and had W. S. Atwell of Boston build him one, weighing 70 pounds and costing $313. Again visiting England, he decided that conditions here warranted their manufacture for the market, and in 1878 he had the Weed Sewing Machine Company, of Hartford, Conn., make some "Columbias" for him in a corner of their shop, the first bicycles made in America. From the first, these have been the American model of durability and excellence of make, as well as of advanced invention in construction and fittings, and unsurpassed in the world; and they still maintain that position. The business soon grew into one of the great manufactures of the country, and the Pope Company was the chief among those merged in the American Bicycle Company a few years ago. The "safety" brought the same expansion here as elsewhere; but since about 1895 there has been a severe decline. The slackening of demand produced a severe crisis in the business, but it eventually settled upon a firm though more limited basis of practical service and every-day pleasure. The census returns show the remarkable changes that have taken place. In 1890 there were 27 establishments engaged in making bicycles in the United States; the capital invested being $2,058,072; the number of employees, 1,797, and the value of the product, $2,568,326. By 1900, the business had so extended that the number of establishments had increased to 312; the amount of capital invested to $29,783,659, while the 17,525 workmen employed received an annual wage of $8,189,817. The cost of material in that year was $16,792,051 and the value of the product $31,915,908. Five years later, when the special census of American manufacturing interests was taken, the number of establishments had been reduced to 101. In that year the capital employed was but $5,883,458; the number of employees, 3,319; the wages paid, $1,971,403; the cost of materials, $2,628,146, and the value of the product, $5,153,240. The number of finished machines turned out was 250,487, of which 2,328 were motorcycles. Between 1904 and 1914 the number of establishments in operation decreased from 122 to 94, but the number of workers increased 33.7 per cent — to 4,487, and the value of the output 111.2 per cent — to $17,667,676. A considerable part of this increase was due to the motorcycle industry: there were 62,793 of these machines made, a value of $12,306,447. The number of bicycles made was 398,899, valued at $5,361,229. The remainder of the output was in parts, valued at $7,819,266. The capital employed in 1909 was $9,780,102. In France the vogue of the bicycle has steadily progressed. The official records show that in 1912 there were 2,969,585 bicycles in use in that country: about one to each 13 persons. Ten years before the proportion was one to each 30 persons.

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**BIDA**, bē'dą, **Alexandre**, French painter: b. 1813; d. 2 Jan. 1895. He studied in Paris under Delacroix; traveled in the East for two years, and most of his paintings have Oriental or Scriptural subjects. He was at his best in water-color work. Among his paintings are 'The Slave Market,' 'The Massacre of the Mamelukes' (Metropolitan Museum, New York); 'Jews Praying at the Well of Solomon' and 'The Field of Boaz.' He is more generally known as the illustrator of Alfred de Musset's complete works (10 vols., Paris 1865–66), and of the Bible, comprising the 'Four Evangelists' (1876), and the 'Book of Ruth.'

**BIDAR**, bē'dār, India, an ancient town in the Nizam's dominions, 75 miles northwest of Haidarābād; noted for the metal ware to which it has given the name of Bidri or Bidery. It occupies a commanding site above the surrounding country, and its mosque and madrissa or college testify to its former splendor and importance. Pop. 14,000.

**BIDASSOA**, bē-dąs-sō'ą, a river in Spain, about 45 miles long, the last 12 of which form the boundary between France and Spain. It rises in the mountains of Spanish Navarre, and, after various changes of direction, falls into the Bay of Biscay near Fuenterrabia. In former times Spain claimed not only the entire river, but so much of its banks, on the French side, as its waters covered at full tide. This difference was finally settled by each country contenting itself with its own shore. Near Irun there is a small island in the middle of the stream, called the Island of Pheasants, on which, being neutral ground, Louis XI and Henry IV met in 1463. Here also peace was concluded between France and Spain in 1659. It was the scene of two engagements of the Napoleonic wars. On 1 Aug. 1813 the Allies defeated the French under Soult at San Marcial, on the Bidassoa, and in the following October Wellington ousted the French from their entrenched positions on the northern bank of the stream.

**BIDDEFORD**, Me., city in York County, on the right bank of the Saco River, six miles from the sea, and on the Boston & Maine Railroad, 15 miles southwest of Portland. The river separates it from Saco (q.v.) and, like that city, Biddeford grew up as a manufacturing centre, its development being favored by the abundant water-power furnished by the falls, the stream descending here about 40 feet. The city also has a large local trade. The leading industries include the extensive manufacture of cotton goods, lumber, match blocks, boots and shoes, machinery, etc. Here are some of the most important cotton mills in New England, the products of which are found

in the markets of many States. Near the city are granite quarries which annually produce large quantities of superior stone, used in many parts of the world. Several thousand people are employed in the city's industries and the flourishing of these has led to its gradual growth. It has two national banks. There is a fine beach here with good boating and bathing facilities and Biddeford is becoming a favorite resort. The public school system is well organized and conducted and the various religious denominations are represented by 14 churches. The intellectual life of the people is also stimulated through useful local publications and an excellent public library. The city was named from Biddeford, England, the home of some of its early settlers. In 1616 a small settlement was made at Biddeford Pool, near the mouth of the Saco, and Biddeford was settled under a patent in 1630, embraced Saco until 1718 and was then incorporated under its present name. This was long the chief settlement of the Maine province. In 1855 Biddeford received a city charter. The present government includes a mayor and a city council, elected annually. The population in 1910 was 17,079. Consult Folsom, 'History of Saco and Biddeford' (Saco 1830); Clayton, 'History of York County' (Philadelphia 1880); Ridlon, 'Saco Valley Settlements and Families' (1895).

**BIDDING PRAYER,** a prayer which directs that which is to be prayed for. The form is very ancient, dating back to Apostolic times. In the ancient Church it was used in the service after the departure of the catechumens, the communicants remaining. It was offered by the deacon, each petition beginning, "Let us pray for ———," and the faithful making responses at its conclusion. A form of bidding prayer was enjoined by the 55th canon of the Anglican Church in 1603 to be used before all homilies and sermons. It is a prayer for the Church, the sovereigns and others in high station, and a thanksgiving for the faithful departed, always concluding with the Lord's Prayer. Consult Dearmer, 'Everyman's History of the Prayer Book' (Milwaukee 1913); Harford, 'Prayer Book Dictionary' (New York 1912) and Wheatley, 'Bidding of Prayers Before Sermon No Mark of Disaffection to the Present Government: Or an Historical Vindication of the LVth Canon' (London 1718; new ed., 1845).

**BIDDLE, Anthony Joseph Drexel,** American publisher, journalist and miscellaneous writer: b. West Philadelphia, 1 Oct. 1874. He was educated at a private school in Philadelphia and at Heidelberg, Germany. He lived in the Madeira Islands, studying conditions there, returning to the United States in 1891. He joined the staff of the Philadelphia *Public Ledger,* and contributed to magazines and humorous journals. In 1895 he revived the Philadelphia *Sunday Graphic* and became its editor and was president of the Drexel Biddle publishing house in 1897–1904. He is the founder of the movement known as Athletic Christianity and in 1907 founded the Drexel Biddle Bible Classes, now numbering 30,000 in English-speaking countries. He is fellow of the Royal Geographical Society and corresponding member of the Société Archæologique de France. He has written 'A Dual Rôle and Other Stories,' 'An Allegory and Three Essays,' 'The Madeira Islands,' 'The Froggy Fairy Book,' 'All Around Athletics' (1894); 'The Flowers of Life' (1898); 'Shantytown Sketches' (1898); 'The Madeira Islands' (1900); 'The Land of Wine' (2 vols., 1901).

**BIDDLE, Arthur,** American lawyer: b. Philadelphia, Pa., 23 Sept. 1852; d. 8 March 1897. He studied law and was admitted to the bar in 1878. Later he became a member of his father's firm and devoted much time to the study of certain branches, the results of which were published in his works, 'Treatise on the Law of Stock Brokers' (1881); 'Treatise on the Law of Warranties in the Sale of Chattels' (1884); and 'The Law of Insurance' (1893).

**BIDDLE, Clement,** American Revolutionary soldier: b. Philadelphia, 10 May 1740; d. there, 14 July 1814. He was educated in the tenets of the Society of Friends (Quakers) and in early life engaged in commercial pursuits in his native city; but notwithstanding his Quaker training, he joined a number of Quaker friends, in 1764, in forming a military corps for the protection of a party of friendly Indians who had sought refuge in Philadelphia from the fury of a band of lawless zealots known as the "Paxton Boys," who had recently massacred some unoffending Conestoga Indians at the interior town of Lancaster. These banditti, powerful in numbers, had advanced within five or six miles of the city, threatening destruction to all who should oppose them, when the vigor of the military preparations checked their further progress. Scarcely had this local disturbance been quieted when news was received of the resolution of the British House of Commons to charge certain stamp duties in the colonies. The feeling engendered throughout the whole country by this step and by the subsequent passage of the Stamp Act induced, in Philadelphia, the celebrated "non-importation resolutions" of 25 Oct. 1765, signed by the principal merchants of the city, including Colonel Biddle and his brother Owen. When all hope of a reasonable adjustment of the differences was lost, Colonel Biddle was greatly instrumental in forming the "Quaker" company of volunteers raised in Philadelphia in 1775, of which he was elected an officer before the corps joined the army. Congress, on 8 July following, elected Colonel Biddle deputy quartermaster-general of the militia of Pennsylvania, New Jersey, Maryland and Delaware, ordered to rendezvous at Trenton. Colonel Biddle took part in the battle of Trenton at the close of the same year and, with another officer, was ordered by Washington to receive the swords of the Hessian officers. He was also engaged in the victory of Princeton, the surprise and retreat of Brandywine and the unsuccessful enterprise of Germantown and during the winter of 1777–78 shared the sufferings of the American army at Valley Forge. As commissary-general of forage under General Greene he rendered important service to the army in several critical junctures, especially during the famine at Valley Forge. At Monmouth he shared the success of his countrymen. In September 1780,

owing to the pressure of his private affairs, he was compelled to return to private life. His military career, however, was briefly renewed in the capacity of quartermaster-general of Pennsylvania in the expedition under Washington, in 1794, against the whisky insurgents of that State. Colonel Biddle labored earnestly also in the early political movements of the patriot party of his State, advocating effectively the revolutionary State Constitution of 1776 (which his brother Owen had had, as a member of the convention, a share in framing). He was also active in support of a declaration or bill of rights as a constituent part of the Federal Constitution to prevent abuse or misconstruction of its powers. After the organization of the Federal government under the Constitution of 1787, Colonel Biddle was appointed marshal of Pennsylvania, as an evidence of the regard in which he was held by Washington.

**BIDDLE, James,** American naval officer: b. Philadelphia, 28 Feb. 1783; d. 1 Oct. 1848. He was educated at the University of Pennsylvania and entered the navy in 1800. In the war against Tripoli he served as a midshipman, was taken prisoner and kept in confinement for 19 months. In the War of 1812 he was a lieutenant on the *Wasp* when she captured the *Frolic* and was later captured by the *Poictiers*. Though a prisoner for a short time at Bermuda, Biddle was exchanged and in 1813 took command of the *Hornet* and captured the British brig *Penguin* on 23 March 1815, being wounded in action. He was made captain in 1815 and received a gold medal from Congress in reward for his services. In 1817 he was sent to take possession of Oregon for the United States. He was afterward commissioner to Turkey and China and in 1845 negotiated the first treaty between the United States and China. He also served on the Pacific coast in the Mexican War.

**BIDDLE, John,** English Socinian writer and founder of English Unitarianism: b. Wotton-under-Edge, Gloucestershire, 14 Jan. 1615; d. London, 22 Sept. 1662. He entered Magdalen College, Oxford, in his 19th year and graduated A.M. in 1641. Being led to doubt the doctrine of the Trinity, he drew up 'Twelve Arguments' on the subject, for which he was committed to jail, but was released on bail. About six months afterward, on examination before a committee of Parliament, he acknowledged his opinion against the divinity of the Holy Ghost and his 'Twelve Arguments' were ordered to be burned. He persisted in his opinion and in 1648 published two tracts, containing his 'Confession of Faith Concerning the Holy Trinity' and 'Testimonies' of Irenæus, Justin Martyr and several other early writers on the same subject. On this the Assembly of Divines asked Parliament to decree the punishment of death against those who should impugn the established opinions respecting the Trinity and to enact severe penalties for minor deviations. Such a decree was passed, but differences of opinion in the Parliament itself and the penalties to which this sweeping measure rendered many in the army liable prevented its execution. Biddle was again remanded to prison, however, and remained for some years in rigorous confinement. A general act of oblivion in 1651 restored him to liberty, when he immediately disseminated his opinions both by preaching and by the publication of his 'Twofold Scripture Catechism.' For this he was confined in the Gate House for six months. Cromwell banished him to Saint Mary's Castle, Scilly Islands, assigning him an annual subsistence of 100 crowns. Here he remained three years, until liberated in 1658. He then became pastor of an Independent congregation and continued to support his opinions until fear of the Presbyterian Parliament of Richard Cromwell induced him to retire into the country. On the dissolution of that Parliament he preached as before until the Restoration, after which he was obliged to confine himself to private preaching. In June 1662 he was apprehended at one of the private assemblies and upon process of law fined £100 and ordered to lie in prison until it was paid. He fell a victim to jail fever and died in the 47th year of his age, a martyr to religious intolerance. His private character was moral, benevolent and exemplary and Toulmin styles him the "father of the modern Unitarians." Consult Toulmin, Joshua, 'Life of John Biddle' (London 1789; new ed., 1805) and Spears, 'Memorable Unitarians' (London 1906).

**BIDDLE, Nicholas,** American naval officer: b. Philadelphia, 10 Sept. 1750; d. 7 March 1778. In 1765, while on a voyage to the West Indies, he, with two others, chosen by lot, were left for two months on an uninhabited island. In 1770 he entered the British navy. When Phipps, afterward Lord Mulgrave, was about to start on his exploring expedition, young Biddle, though a midshipman, deserted his own vessel and shipped as a seaman on the *Carcass*, serving through the cruise with Lord Nelson, who was a mate of Phipp's vessel. On the commencement of the American Revolution he came to America and was made captain of the *Andrew Doria*, a brig of 14 guns and 130 men, taking part in Commodore Hopkins' attack on New Providence. After refitting in New London he was ordered on a cruise to the banks of Newfoundland and in 1776 took, among other prizes, two transport ships with valuable cargoes and a battalion of Highland troops. He was appointed to the command of the *Randolph*, a 32-gun frigate, in February 1777. In March 1778 he was wounded in an action with the *Yarmouth*, an English 64-gun ship, near Charleston, S. C. While under the hands of a surgeon the magazine blew up and the whole crew of the *Randolph* were lost, except four men, who were tossed about on a piece of wreck for four days before being rescued. The other vessels of the squadron escaped in consequence of the disabled state of the *Yarmouth*.

**BIDDLE, Nicholas,** American financier: b. Philadelphia, Pa., 8 Jan. 1786; d. there, 27 Feb. 1844. He became secretary to John Armstrong, United States Minister to France, in 1804 and subsequently went as secretary to James Monroe, then United States Minister to England. He returned home in 1807 and took up the practice of law, was elected to the Pennsylvania legislature in 1810 and appointed a director of the United States Bank in 1819.

He became president of the bank in 1823 and managed it ably down to the expiration of its charter. The financial trouble precipitated upon the country by Jackson's withdrawal of the government deposits in 1833 gave an unfortunate ending to Biddle's career as a banker, but while both his ability and his integrity were questioned at the time, he has been amply vindicated since. In 1836 he became president of the new United States Bank, but resigned in 1839. Besides miscellaneous writings, he published a 'Commercial Digest' and 'History of the Expedition Under Lewis and Clarke to the Pacific Ocean.' He was president of the board of trustees for the funds of Girard College and was instrumental in establishing that institution.

**BIDDLE, Richard,** American lawyer: b. Philadelphia, Pa., 25 March 1796; d. Pittsburgh, 7 July 1847. He studied law and was admitted to the bar in Pittsburgh. He was a member of Congress (1837–41) and was author of a 'Memoir of Sebastian Cabot, with a Review of the History of Maritime Discovery' (1831).

**BIDDLE, William Phillips,** American marine officer: b. Philadelphia, Pa., 17 Dec. 1853. Graduating from the University of Pennsylvania he entered the United States Marine Corps, in which service he attained the rank of captain in 1894. He was present on board the *Olympia* with Admiral Dewey during the battle of Manila Bay 1898. In 1900, during the Boxer uprisings in China, he was in command of the American forces operating with the international expedition to Pekin. From 1909 to 1910 he was commandant of the marine barracks at New York, after which he filled a similar position at Panama. In 1911 he was promoted to the rank of major-general and in 1914 he was retired.

**BIDDULPH, Sir Michael Anthony Shrapnel,** English military officer. b. Cleeve Court, Somersetshire, 1823; d. London, 23 July 1904. He entered the Royal artillery in 1843 and served in the Crimean War at Alma, Inkerman, Balaklava and the siege of Sebastopol. In India he commanded the field force and marched to Kandahar and the Helmund and returned by the Tal Chotiali and Boree to the Indus, in 1878–79. He was created K.C.B. in 1879 and G.C.B. in 1895 and in 1896 became gentleman usher of the Black Rod.

**BIDEFORD,** England, a market town and municipal borough of Devonshire, 44 miles north of Plymouth; situated on both sides of the Torridge, four miles from the sea, the principal portion being on the west side, on a bold acclivity. A handsome stone bridge of 24 arches and 677 feet in length connects the two divisions of the town. It has a spacious market place, an Elizabethan town-hall, public assembly rooms and music hall. The Bridge Hall, in French Renaissance style, contains a free library, a reading-room and a science and art school. The most important church is that of Saint Mary, in Perpendicular style, rebuilt, except the tower, in 1865. The chief industries comprise the manufacture of coarse earthenware, ropes, sails and collars and cuffs, tanning, malting, iron-founding, etc. Timber and coal are exported chiefly to Ireland and Wales. In former times Bideford had an extensive shipping trade and is said to have imported more tobacco in some years than the metropolis. From the beginning of the 18th century this trade gradually declined and gave place to a small coasting trade. Vessels of 500 tons approach the quay. Bideford dates from before the Norman conquest. It was the birthplace of Sir R. Grenville, a founder of Virginia, whose exploit in attacking a Spanish fleet is celebrated by Tennyson. Pop. 9,078. Consult Watkins, 'History of Bideford' (Exeter 1792).

**BIDPAI,** bĭd'pī, or **PILPAI.** When we consider the wonderful history of 'Bidpai's Fables,' their fame and their charm, we naturally invest their supposititious author with a personality and a name. In fact, however, "Bidpai" is probably a changed form of an Indian word for "court-scholar," misunderstood as a proper name, and implying therefore neither personality nor specific date. In India from early times the parable or "example" has been the recognized method of conveying moral instruction. In the didactic literature, some general truth or some rule of life is stated in the form of a maxim, and a beast fable or other story then added as a concrete instance or "example." The folk-lore of which these tales are a reflex is not the exclusive property of any of the great religions of ancient India, but is common to Buddhism, Jainism and Brahmanism alike. The sculptured representations of the stories upon the great Buddhist monuments of 250 B.C. make it certain that the stories themselves were familiar to the common people at that early date; and it is hardly less certain that they were so known long before that time. The oldest and most important collection of Indian folk-lore is the Buddhist one called 'Jataka'—that is, 'Birth-stories,' or stories of Gautama Buddha in his previous births: it consists of 550 tales, each containing a moral; each is placed in the mouth of the Buddha, and in each the Buddha plays the best and most important part. It is this device of a framework or setting for the folk-tales that constitutes the principal essentially literary element of the collection. Next in importance to the Buddhist 'Jataka' stands the Brahmanical 'Panchatantra.' Here the material is not essentially different in kind from that of the 'Jataka'; but again it is the setting of the material which gives the work its distinctive literary character. It is a kind of 'Mirror for Magistrates.' Both the 'Jataka,' written in Pali, and the 'Panchatantra,' in Sanskrit, are still extant, and contain many of the stories which in translations of translations attained great currency and celebrity in mediæval literature.

The precise Indian original of these translations is lost; but we know that it was translated into the literary language of Persia (the Pehlevi, or Pahleir), by command of the Sassanian King, Khosru the Just, about 550 A.D. From the Pehlevi came two notable versions: one the Old Syriac, called 'Kalilag and Damnag,' after the two jackals, Karataka and Damanaka, who figured prominently in the framework of the Sanskrit original; and the other the Arabic version, called 'Kalilah and Dimnah,' or 'Fables of Bidpai,' made about 750 A.D. by Abd-allah ibn al-Moqaffa, a Persian convert to Islam under the Caliph

al-Mansor. According to the Arabic introduction, Dabshelim was the first king of the Indian Restoration, after the fall of the governor appointed by Alexander at the close of his campaign in the Punjab, 326 B.C. When firmly established, Dabshelim gave himself over to every wickedness. To reclaim the King, a Brahman philosopher takes up his parable, as did Nathan before David, and at last wins him back to virtue. The wise man is called in Arabic *bid-bah,* and in Syriac *bid-vag.* These words are traced through the Pehlevi to the Sanskrit *vidya-pati,* "master of sciences." Accordingly *bid-bah,* which has become Bidpai or Pilpai in our modern books, is not really a proper name, but an appellative, applied to a "chief pandit" or "court-scholar" of an Indian prince.

From the Arabic are descended, in the fourth generation from the original, a dozen or more versions, of which three may be mentioned as noteworthy links in the chain of tradition: the Greek one, made about 1080 by Symeon Seth, a Jewish physician; the Persian, made some 50 years later, by Nasr Allah of Ghazni; and the Hebrew, ascribed to Rabbi Joel, and probably made before 1250. Of the descendants in the fifth degree from the original, the 'Directorium Humanæ Vitæ,' made about 1270 by John of Capua from the Hebrew, is distinctly the most celebrated, because it gave rise in turn to Danish, Dutch, Spanish, Italian and French, and above all to the famous German and English versions mentioned below. But besides the 'Directorium,' we must notice the 'Specimen of the Wisdom of the Ancient Hindus,' a version into Latin from the Greek Symeon, made by the Jesuit father, Petrus Possinus (1666); and the 'Anvár-i Suhaili' or 'Lights of Canopus,' a simplified recast of Nasr Allah's. In the second edition of his fables, La Fontaine tells us that he owes the largest part of his new material to "Pilpay, the Indian sage." Pierre Poussin's 'Specimen' was the one embodiment of his shadowy Oriental fabulist, and a French version of the 'Lights' was the other. Two offshoots of the 'Directorium' are of unrivaled interest to the student of the beast fable. The one is the 'Book of Examples of the Ancient Sages,' and the other is Doni's 'La Moral Filosophia' (1552). The 'Book of Examples' was made at the instance of Duke Eberhard in Bart, whose name and motto, "*Eberhart Graf z(u) Wirtenberg Attempto,*" appear as an acrostic in the initials of the first sections. It was first printed about 1481 and has since been admirably edited by W. L. Holland (Stuttgart 1860). Holland used, besides three manuscripts, two printed editions without place and year, and enumerates 17 dated editions that appeared between 1483 and 1592. Four dated editions appeared at Ulm between 1483 and 1485. The great number of editions of the work and their rapid succession are the best proof of its importance as a means of instruction and amusement at the beginning of the age of printing. The examples themselves had doubtless pointed the moral of many an ancient homily long before the days of Gutenberg; but the language of the old German version of them is so remarkable for its simplicity, dignity, strength and beauty that we cannot wonder at its immense popularity; and to this version, more than to any other, is Europe indebted for the widespread knowledge of this cycle of literature from the last part of the 15th to the middle of the 17th century. The other offshoot of the 'Directorium'—namely, 'The morall philosophie of Doni: drawne out of the auncient writers. A worke first compiled in the Indian tongue and afterwardes reduced into divers other languages; and now lastly Englished out of Italian by Thomas North' (London 1570)—is most interesting to us as English-speaking people because it is "the first literary link between India and England, written in racy Elizabethan," a piece of "Tudor prose at its best," a veritable English classic. Consult Browne, E. G., 'Persian Literature' (1906); Deslongchamps, 'Essai sur les fables indiennes' (Paris 1838); id., 'Lights of Canopus' (new ed., London 1904); Hervieux, 'Les fabulistes latins' (1899); Keith-Falconer, 'Kalilah and Dimnah' (1885); id., 'Translation of Wright's Edition of the Latin Syriac Version of Bidpai's Fables' (Cambridge 1885); Lanman, 'Sanskrit Reader' (1888); Rhys Davids, 'Buddhist Birth Stories' (London 1880); Müller, Max, "On the Migration of Fables" (in 'Chips from a German Workshop', Vol. 3, London 1880); North, 'Morall Philosophie of Doni' (ed. Jacob 1888).

CHARLES ROCKWELL LANMAN,
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**BIDWELL, John,** American politician: b. Chautauqua County, N. Y., 5 Aug. 1819; d. 5 April 1900. He went to California in 1841; served in the Mexican War, reaching the rank of major; was a member of the Constitutional Convention of 1849, and of the National Democratic Convention in Charleston in 1860. In the Civil War he was brigadier-general of California militia. In 1864 he was elected to Congress as a Republican; in 1866 was a member of the Philadelphia convention; in 1890 was the unsuccessful Prohibition candidate for governor of California, and, in 1892, unsuccessful candidate of his party for the Presidency.

**BIDWELL, Marshall Spring,** Canadian statesman: b. in New England 1799; d. 1872. Migrated to Canada in 1812 and elected to the Upper Canada assembly in 1824, becoming speaker in 1829 and securing re-election to that office in 1835. His strong sympathy with the popular movement which culminated in the Rebellion of 1837, and his covert part in the rising, led to his voluntary banishment from the country in 1838.

**BIEBERMANN, Gustav Woldemann von,** BARON, German historian: b. 5 March 1817; d. 1903. After graduating from the University of Heidelberg, where he had studied law, he practised privately for a while, then entered the government civil service. He rose rapidly in rank in the management of the state railroads, finally becoming chief director of railroads. He made many contributions to the literature on Goethe, among which may be mentioned 'Goethe und Leipzig' (2 vols., Leipzig 1865); 'Zu Goethes Gedichten' (Leipzig 1870); 'Goethes Gespräche' (10 vols., 1889–97).

**BIEBERSTEIN, Adolf Marschall von,** BARON, German statesman: b. Karlsruhe, Germany, 1831; d. Badenweiler, 24 Sept. 1912. Son of a court chamberlain of Baden, he studied

law at Heidelberg and Freiburg, and entered the civil service of his native state. In 1878 he was sent to the Reichstag as a Conservative and appointed representative for Baden in the Federal Council (1883). In 1880 he succeeded Count Herbert Bismarck as Foreign Secretary, in which capacity he negotiated the commercial treaties under Chancellor Caprivi. He incurred the bitter hostility of the Agrarians and certain court circles, and was the subject of a police intrigue which he defeated. The Kaiser's historic telegram to President Kruger over the Jameson raid (5 Jan. 1896) is generally ascribed to him; he also declared that the independence of the South African Republic was a matter of vital interest to Germany. Political opposition compelled him to resign the Foreign Secretaryship in June 1897; four months later he was sent as Ambassador to Constantinople, where he revealed most remarkable ability as a diplomatist. He consolidated German influence in Turkey, obtained the Bagdad Railway concession which caused so much strife between interested European powers, especially with England, and brought about the downfall of the notorious Fehim Pasha, a favorite of Abdul Hamid and certainly the most disreputable villain in the Sultan's entourage. He had overreached himself by literally stealing a German vessel laden with lumber, which brought the energetic German Ambassador on his trail. When Fehim had to be dropped, all Constantinople rejoiced; the mob shortly after expressed their gratification by hanging him on a lamppost in the street. After the Young Turk revolution (1908–09) Baron Marschall ingratiated himself with the new rulers, but his position was severely shaken by the Turco-Italian War — the seizure of Tripoli being an equally bitter disappointment to both Germany and Turkey. Germany could not well interfere as she was an ally of both belligerents. On the retirement of Count Wolff-Metternich (8 May 1912) Baron Marschall was appointed Ambassador in London. It was hoped in England that the strongest man in German diplomacy would help to place the relations between the two countries on a more satisfactory basis, but unfortunately he died four months later, before he had entered upon his new duties. His death was deeply regretted alike in London and Berlin.

**BIEDA**, be'da, the modern name of the ancient Blera, a town in Italy. It is noted for its extensive Etruscan necropolis of rock-hewn tombs, built in several terraces. These tombs are interesting for their imitation of dwellings. They have molded doorways, and, within, the ridge beams and rafters of the roof are cut in relief. There are rock benches on three sides made to receive the dead and, besides the doors, numerous windows.

**BIEDERMANN, Friedrich Karl**, German author: b. Leipzig, 25 Sept. 1812; d. 1901. He was educated at Leipzig and Heidelberg. He became professor of philosophy in Leipzig University in 1838 and held this chair till 1845, when he was deposed on account of his political opinions. In 1849 he played an important rôle in the Parliament of Frankfort; was elected to the National Assembly, of which he was vice-president for a short term, and was reinstated as professor at Leipzig, but was again removed in 1853 for political reasons. In 1854 he edited the *Deutsche Annalen* and was sentenced to a term of imprisonment and removed from his professorship. He was editor of the *Deutsche Allgemeine Zeitung* (1863–66), and founded and edited a number of other liberal papers. His works include 'Wissenschaft und Universität' (1838); 'Die deutsche Philosophie von Kant bis auf unsere Tage' (1842–43); 'Vorlesungen uber Sozialismus und soziale Fragen' (1847); 'Erinnerungen aus der Paulis Kirche' (1849); 'Fünfzig Jahre im Dienste des nationalen Gedankens' (1892); 'Friedrich der Grosse und sein Verhältniss zur Entwickelung des deutschen Geisteslebens' (1859); 'Vorlesungen über Sozialismus und Sozialpolitik' (1900); 'Deutsches Volks und Kulturgeschichte' (4th ed., 1901). Consult his 'Mein Leben und ein Stückzeitgeschichte 1812–1886' (2 vols., 1886).

**BIEFVE**, byĕf, **Eduard de**, Belgian painter: b. Brussels, 4 Dec. 1809; d. there, 7 Feb. 1882. He painted many portraits and was also noted for his scenes from history. His best-known work probably is his 'Compromise of the Netherlands Nobles at Brussels, 1566.' Among others are 'Last Moments of Anne Boleyn,' 'The Introduction of Rubens to Charles I of England,' 'Masaniello,' 'Raphael and La Fornarina.'

**BIEL**, bēl, **Gabriel**, German philosopher: b. Spires about 1425; d. Tübingen 1495. He was educated at Heidelberg and Erfurt, and became a cathedral preacher in Mainz. In 1477 he was made provost of Urach and an adviser in the founding of the University of Tübingen, where he became professor of theology in 1484. He has been erroneously called "the last of the Schoolmen." His principal works are 'Collectorium ex Occamo super iv Libros Sententiarum' (1495); 'Expositio Canonis Missæ' (1510); 'Sermones Dominicales de Tempore et de Sanctis per Totum Annum' (1519); 'De Monetarum Potestate simul et Utilitate' (1541).

**BIELA**, bē'la, **Wilhelm von**, Austrian officer and astronomer: b. Rossla, 19 March 1782; d. Venice, 18 Feb. 1856. He entered the army, reached the grade of major and finally resigned the profession of arms to study the fine arts and astronomy. On 27 Feb. 1826 he discovered at Josephstadt, Bohemia, a new comet which, a few days later, was sighted by Gambart from Marseilles. Both noticed its similarity to comets appearing in 1772 and 1805 and fixed its period at between six and seven years, but it was named after Biela, who had first discovered it. Shortly after its reappearance at the end of 1845 it was seen to divide into two portions, each of which afterward developed a tail and a brilliant nucleus, features wanting in the original body. In August 1852 the double comet reappeared, but this time the two portions were much farther apart; and not long after the comet vanished and has never been sighted since.

**BIELA'S COMET**, a comet of short period, named after its discoverer, Wilhelm von Biela (q.v.), who discovered it in 1826 and furnished such data regarding its movements as to convince the other astronomers of his day that he had a proprietary right to it. The same comet had been noticed 8 March 1772, and

again in 1805. It was reckoned that the comet had passed its perihelion six times between the two periods without being detected by the astronomers. On another visit it passed out of sight on 3 Jan. 1833. Its next appearance was in July 1839. It was found again late in November 1845, and in the following month an observation was made of one of the most remarkable phenomena in astronomical records, the division of the comet. It put forth no tail while this alteration was going on. Professor Challis, using the Northumberland telescope at Cambridge, on 15 Jan. 1846, was inclined to distrust his eyes or his glass when he beheld two comets where but one had been before. He would call it, he said, a binary comet if such a thing had ever been heard of before. His observations were soon verified, however. Late in August 1852, the larger came into view and three weeks later the smaller one, now much fainter than its former companion, was seen about 1,500,000 miles in the lead. Schiaparelli's investigations showed it to be probable that the comet is the illuminated central mass of a stream of meteorites. The Bielid stream of meteors (or Andromedes, as they are also known from the position among the stars from which they seem to radiate) revolves around the sun in a period of 13 years, and the earth passes their orbit every year but meets the main swarm only when passing the point of intersection of the two paths. The meeting usually takes place on the 27th or 28th of November.

**BIELAGA**, a Russian name for the great European sturgeon (*Accipenser huso*), also called "hausen" and "huso." See STURGEON.

**BIELAYA**, byĕl-ą-yą, the name of 10 Russian rivers, the most important of which is about 500 miles in length, rises in the Ural Ridge and flows northwest to the Kama River. From April to November it is navigable from its mouth to the city of Ufa, about 200 miles, regular trade in minerals, lumber and salt being carried on. Of the other rivers of this name may be mentioned the one in the government of Irkutsk, Siberia, which is a branch of the Angara, and another in the government of Yekaterinoslav which flows through a coal region.

**BIELEFELD**, bē'lē-felt, Prussia, a town in the province of Westphalia at the northern foot of the Teutoburger-Wald, 38 miles east from Münster. The river Lutter divides it into an old and a new town. The best German linens are manufactured here, flax-spinning and bleaching are largely carried on and there are various other industries, among which some of the chief are shirt-making, silk-weaving, the manufacture of cycles, sewing machines and motor cars and of cigars, glass, cement, leather, etc. It contains a gymnasium, two hospitals and other public buildings. The Bethel colony for epileptics was founded here in 1876 and has now 1,600 patients. The castle of Sparenburg, built in 1017, is in the immediate vicinity and, since its recent restoration, has been occupied as a museum. Pop. 78,334.

**BIELGOROD**, byĕl'gō-rōt. See BELGOROD.

**BIELITZ**, bē'lĭts, Austria, town in the crownland of Silesia, 40 miles southwest of Cracow, on the left bank of the Biala. It is separated from Biala in Galicia by the river, over which is built a bridge. It is an important centre of the Austrian textile industries, manufacturing large quantities of woolen goods for the trade in the Orient. Wire, nails, machinery, glassware, furniture and paper are also manufactured in important quantities. Pop. 18,568, of which the largest proportion is German.

**BIELO-OZERO**, byĕl-ō-ō'zą-rō ("white lake"), a lake of European Russia, in the government of Novgorod, whose outflow is carried by the Cheksna River to the Volga. It is of a somewhat circular form, 27 miles long and 20 miles broad, and has an area of about 430 square miles. Its bottom consists of a white clay which in stormy weather gives the water a milky-white appearance, hence the name. A system of canals connects it with Lake Onega, the Dwina and other rivers. It also forms part of the canal system which connects the Baltic and Caspian seas.

**BIELOWSKI**, byĕ-lōv'skę, **Augustus**, Polish poet: b. Krechowice, Galicia, 1806; d. 1876. He received university training and became director of the Ossolinski Institute at Lemberg in 1869. Among his poetical compositions is to be mentioned the historical rhapsody, 'Lay of Henry the Pious.' He wrote a 'Critical Introduction to the History of Poland' (1850), but his principal work was the publication of 'Monumenta Poloniæ Vetustissima' (1864–72); a collection of Polish chronicles up to the time of Duigoz, since his death continued by the Cracow Academy of Sciences. He also made several translations from Schiller. He edited 'Pompeii Trogi Fragmenta' (1853), fragments of Pompeius found at the Ossolinski Library.

**BIELSHÖHLE**, bĕlz'hėl-ĕ, a stalactite cavern in the Bielstien Mountain Harz, on the right bank of the Bode. It was discovered about 1672, but first made accessible in 1788. Its entrance is 108 feet above the bed of the stream; and its total length is 230 yards.

**BIELSKI**, byĕl'skę, **Marcin**, Polish historian: b. Biala, near Sieradz, 1495; d. there 1575. His 'Kronika swiata' and 'Kronika Polska' (1550 and 1564) contain the first comprehensive attempt at a history of Poland. He wrote two satirical poems, 'Sen majowy' (1590) and 'Seym niewiesci' (1595), picturing, in the one, the degradation of Hungary and calling upon his countrymen to exhibit a nobler spirit than the Hungarians, while the other gives a keen analysis of the condition of Poland in his days. A strategetical work, 'Sprawa rycerska' (1569), gives valuable information upon the condition of the Polish army and the character of Polish tactics. After serving in the army and taking part, in 1531, in the battle of Obertyn, he devoted himself for the rest of his days to literary pursuits. In 1617 the bishop of Cracow interdicted his 'Chronicles,' as they were suspected to contain heterodox sentiments. His satirical poems made him many enemies. He idealized the distant past and regarded his own period as one of general decadence.

**BIENAIME**, bī-ĕn'ā-me, **Luigi**, Italian sculptor: b. Carrara 1795; d. Florence, 17 April 1878. He studied his art in Rome under the

tuition of the famous Danish sculptor, Thorvaldsen, with whom he collaborated later extensively. He has been considered one of the leading sculptors of his period in Italy. Among his chief works are 'John the Baptist' (1820), now in the Metropolitan Museum of Art, in New York city; 'Cupid and the Dove,' now in Milan; 'Venus,' in the Turin Museum; and several statues in the Winter Palace at Petrograd. The influence of Thorvaldsen is obvious in all his works.

**BIENCOURT, by-äṅ-coor, DE POUTRINCOURT, Charles:** b. 1583; d. 1624. Son of Jean de Poutrincourt (q.v). He accompanied his father to Port Royal in 1605. He visited France in 1611, created a stir at court by the announcement of Indian conversions and brought back with him Jesuit missionaries. He administered Acadia from 1611–23 and partially rebuilt Port Royal after its destruction by Argall.

**BIENCOURT DE POUTRINCOURT, Jean,** French soldier: b. France 1557; d. Mery-sur-Seine 1615. In 1603 he came to Canada, where De Monts made him a lieutenant, and in 1604 received a grant of Port Royal and established there a colony of which he took little care. The grant was confirmed in 1607, and at the same time the King urged Poutrincourt to labor for the conversion of the savages. Desirous of keeping the Jesuits from Port Royal, he delayed their departure from France, sent back glowing accounts of his own missionary success, and welcomed the Jesuits very ungraciously. He went to France in 1612, and after the English left Acadia sailed thither in 1614, but without having done anything to rebuild Port Royal he returned to France later in the same year. Consult Sulte, B., 'Poutrincourt en Acadie' (in 'Royal Society of Canada Proceedings and Transactions,' Vol. XI, p. 31, 1885).

**BIENER, Christian Gottlob,** German jurist: b. Zörbig, 10 Jan. 1748; d. 13 Oct. 1828. He studied law at Wittenberg and Leipzig, and became instructor in law at the latter university in 1776, becoming professor in 1790. His chief works are 'Commentarii de origine et progressu legum juriumque germanicorum' (Leipzig 1787–95); 'Systema processus judiciarii et communis et saxonici' (Leipzig 1801); 'Opuscula academica' (2 vols., Leipzig 1830).

**BIENNE,** bi-én, Switzerland, town in the canton of Bern, 17 miles northwest of the city of Bern, on the north shore of the lake of the same name, in the valley of the Suze; on the railroad between Bern and Basel.. It nestles among the lower foothills of the Jura Mountains, 1,400 feet above sea-level, and cable roads ascend the mountains nearby. Among its architectural attractions are an old castle, the town-hall and the Schwab Museum, which contains an extensive collection of old Roman and Celtic weapons and relics of the ancient lake-dwellers. Here, too, is located the West Swiss Technical Institute, which includes a watchmakers' school and a school for railroad employees. Textiles, tanning, watchmaking, machine building and the manufacture of paper and cigars are the chief industries. Attached first to the bishopric of Basel, it allied itself with Bern canton in 1352, then became a free city, was annexed by the French in 1797, but awarded to Switzerland in 1815. Pop. 23,583.

**BIENNE, Lake of,** called in German, Bielersee, a Swiss lake, 1,419 feet above sea-level, about 10 miles long by three broad, with a depth of 280 feet. Its scenery is more beautiful than bold. Being eight feet below the level of Lake Neufchâtel, it receives its waters by the Thiel and discharges itself into the Aar. On the islet of Saint Pierre, in this lake, J. J. Rousseau resided for two months in 1765. That the lake was a centre of population from remote times, the remains of numerous pile-dwellings prove. At the northern extremity is the town of Bienne (q.v.).

**BIENNIALS,** in botany, plants which do not produce flowers and fruit during the first year of growth, but store up a stock of nourishment in a thickened stem or root, whence they draw the material for the growth of the second year, during which flowers and fruits are developed and the plant dies. Several of our commonest foodplants, such as turnip, cabbage and carrot, are biennials. Under special circumstances favorable to rapid growth a plant ordinarily biennial may become an annual.

**BIENTEVEO,** byän-tā-vā'ō, a flycatcher of southern South America, related to our kingbird and familiar about the villages and gardens of Argentina. Its name comes from its loud and cheerful cry, which resembles the Spanish phrase *Bien te veo,* "I see you well." Unlike its relatives elsewhere, it builds a domed nest, the design of which is so elaborate that several weeks may be required for its completion.

**BIENVILLE,** byăṅ-vel, **Jean Baptiste le Moyne** (SIEUR DE), French colonist: b. 23 Feb. 1680; d. France 1768. In 1698, with his brother Iberville he left France to found a colony at the mouth of the Mississippi. In 1700 he constructed a fort 54 miles above the mouth of the river, and in 1701, at the death of Souvolle, a second brother, he succeeded to the direction of the colony, the seat of which became Mobile. In 1704 a third brother, Chateaugay, joined him with 17 settlers from Canada, and from France came 20 women to be married to the colonists. In 1718 he received a commission as governor of Mississippi, and about this time founded the city of New Orleans. In 1724 he was summoned to France and on 9 Aug. 1726 was removed from office. In 1733 he was sent back to the colony as governor, with the rank of lieutenant-general. In 1743 he was again removed and returned to France, where he lived in retirement for 25 years.

**BIER, August,** German surgeon: b. Helsen, Waldeck, 24 Nov. 1861. He studied at the universities of Berlin, Leipzig and Kiel, after which, in 1889, he became a lecturer at the latter institution. In 1894 he was appointed professor and director of the surgical clinic at Greifswald. In 1903 he continued the same work at Bonn University and four years later at Berlin. He is noted for his original researches, for his many innovations in the practice of surgery and for his daring operations. Among his publications are 'Hyperämie als Heilmittel' (1903; English translation under the title 'Bier's Text-book of Hyperamie as Applied in Medicine and Surgery,' 1909);

'Ueber die Berechtigung des Teleologischen Denkens in der Praktischen Medizin' (1910).

**BIERBAUM,** bēr'bowm, **Otto Julius,** German poet: b. Grüneberg, Silesia, 28 June 1865. He is a rising man of letters; his 'Songs of Experience' (or 'Poems That Were Lived') (1892), is as yet his most noteworthy volume. Other works of his are 'Studentenbeichten' (1897); 'Der bunte Vogel von 1897 und 1899'; 'Ein Kalenderbuch' (1896 and 1898).

**BIERCE, Ambrose,** American author and journalist: b. Meigs County, Ohio, 24 June 1842; d. Mexico 1914. He served in the Civil War as a lieutenant of volunteers and was brevetted major for gallantry. In 1866 he went to California, and he went to London in 1872, where he contributed to *Fun* for 30 years. He was closely identified with Californian journalism. He edited the *Argonaut* and the *Wasp* and was a constant contributor to the *Overland Monthly* and San Francisco *Examiner.* His publications are 'Cobwebs From an Empty Skull' (1874); 'Black Beetles in Amber' (1892); 'Can Such Things Be?' (1893); 'In the Midst of Life' (1898). His most popular work was originally published at San Francisco (1891), under the title of 'Tales of Soldiers and Civilians'; 'Fantastic Fables' (1899); in collaboration with G. A. Danziger, 'The Monk and the Hangman's Daughter' (1892); 'Shapes of Clay' (1905); 'The Cynic's Word Book' (1906); 'The Shadow on the Dial' and 'Write it Right' (1909). His collected works appeared (13 vols.) in 1912.

**BIERNATZKI,** bēr-nāts'ke, **Johann Christoph,** German pietist, poet and story writer: b. Elmshorn, Holstein, 17 Oct. 1795; d. Friedrichstadt, 11 May 1840. A country pastor, he devoted himself to the versification of his own precepts and beliefs, the volume 'Faith' being the result. In 'The Brown Boy' and 'Hallig, or the Adventures of Castaways on an Island in the North Sea,' he displays a not unpleasing capacity for prose narrative.

**BIERSTADT,** bēr'stạt, **Albert,** American painter: b. near Düsseldorf, Germany, 7 Jan. 1830; d. New York, 18 Feb. 1902. He removed with his parents to New Bedford, Mass., in 1831; began to paint in oils in 1851, and in 1853 returned to Düsseldorf to study his art, spending a winter in Rome, traveling in Italy and Switzerland and returning to the United States in 1857. In 1859 he accompanied General Lander's expedition to the Rocky Mountains and spent several months in studies of mountain scenery. He was elected a member of the National Academy in 1860. In 1861 he finished his painting, 'Laramie Peak,' and in 1863 'View of the Rocky Mountains — Lander's Peak.' These at once gave him a national reputation. Among his many other paintings of American subjects are 'Valley of the Yosemite' (1866); 'El Capitan'; 'Looking Down the Yosemite' (1865); 'Great Trees of California' (1874); 'Geysers' (1883); 'On the Saco, New Hampshire' (1886); 'California Oaks' (1886). 'A Storm on the Matterhorn' is the best known of his Alpine subjects. Bierstadt received many foreign medals and decorations and was a member of the National Academy of Design from 1860.

**BIESBOSCH,** bēs'bōs, a marshy sheet of water interspersed with islands, between the Dutch provinces of North Brabant and South Holland, formed in November 1421 by an inundation which destroyed 72 villages and 100,000 people and spread over an area of 80 square miles.

**BIESTER,** bī-ēs'tėr, **João Ernesto,** Portuguese dramatist: b. Lisbon 1829; d. 12 Dec. 1880. At the age of 19 he produced his first play, not without some success. His whole life was spent for and on the stage, producing altogether some 90 plays, many of which were for years the most popular plays before the Portuguese public. Among his best known dramas are 'Mocedade de D. João V' (1858); 'Primavera eterna' (1860); 'Abnegacão' (1861); 'Uma Viagem pela litteratura contemporanea' (1856), the latter being a critical review of dramatic literature.

**BIET,** byā, **Antoine,** French missionary, who in 1652 accompanied 600 colonists to Cayenñe, where he remained 18 months. He was the author of 'Voyage de la France Equinoxiale (1664), with a Galibi dictionary at the end.

**BIEVRE,** bę-āvr, **Maréchal,** (MARQUIS DE), French writer: b. 1747; d. Spa, Germany, 1789. He served in the corps of the French musketeers, was a life-guard of the King of France and acquired much reputation by his puns and repartees. After publishing several entertaining works he composed (1783) 'Le Séducteur,' a comedy in verse, for the theatre, which has maintained its place on the stage, although it is bad both in plan and execution. *Mes amis,* he said, dying, *je m'en vais de ce pas (de Spa).*

**BIFROST,** bē'frėst ("the trembling way"), in northern mythology the name of the bridge represented as stretching between heaven and earth (Asgard and Midgard); really the rainbow. It was used by the gods and was guarded by Heimdal.

**BIG BEN,** the great bell in Westminster Abbey, London. See BELL.

**BIG BETHEL,** Va., village on the peninsula between the York and James rivers, where an unsuccessful attempt, directed by General Butler, was made by General Pierce, with four regiments, to dislodge outposts of Magruder's Confederate encampment at Yorktown, 10 June 1861. The Federal regiments, under Townsend and Bendix, en route for the Big Bethel camp, mistook each other for the enemy and fired. This created great confusion. Pierce arrived and pushed on to the Confederate earthwork on Back River, destroying the camp at Little Bethel. The Federal troops crossed Back River and charged the earthwork, but were repulsed with considerable loss, Maj. Theodore Winthrop, the well-known novelist, losing his life on this occasion. Consult 'Official Records' (Vol. II, Washington 1881–1901) and 'Battles and Leaders of the Civil War' (Vol. II, New York 1887).

**BIG BLACK RIVER,** an affluent of the Mississippi, which it enters at Grand Gulf, Miss., after flowing about 200 miles, 50 of which are navigable. On 16 May 1863 a battle took place on this stream during Grant's pursuit of Pemberton toward Vicksburg. The Confederates were defeated and lost heavily,

both in killed and captured. McClernand, swiftly following the retreating Confederates, came upon them drawn up on both sides of the Big Black River. McClernand led 10,000 Federals, Pemberton 8,000 Confederates, his main command having gone on toward Vicksburg. McClernand began the fight. He was for a time unsuccessful, but Lawler, discovering a weak spot in the Confederate line, immediately took advantage of it and charged impetuously.

**BIG BONE LICK**, a salt spring, in Boone County, Ky., 11 miles south of Burlington, where fossil remains of mastodons and other extinct fauna have been found. These animals are supposed to have resorted here to lick the salty earth in the vicinity of the spring.

**BIG BROTHER MOVEMENT, The.** This movement was founded in 1904 by Ernest K. Coulter, Esq., in New York city. Since that time the work has been taken up in over 100 cities. There is a small staff of paid workers, supplemented by volunteers — lawyers, physicians, merchants, executives, teachers — all busy men, selected because of their good will and natural ability to do effective work. The little brothers are boys referred by parents, hospitals, police, courts, by boys who have been helped. They are the sons of widows, inebriates, prisoners, of careless or ignorant parents — boys who are largely the victims of their environment. The task is to ascertain the cause of the trouble — whether it be truancy, stealing, lying, running away from home, etc.; then, with the co-operation of parents, through the mediation of the Big Brothers, to build up within the boy a sense of honor and good citizenship. Every possible agency is employed to secure results — hospitals for examination or operation, the Y. M. C. A., church and settlement gymnasiums, industrial classes and boys' clubs, Boy Scouts, trade schools, camps and farm schools. Where the proper agency does not exist it is established.

**BIG-HORN**, the wild sheep of the mountains of western North America, so called on account of the massive, spiral horns of the ram, which resemble those of the Asiatic argali. They originally ranged throughout the whole mountain system from New Mexico to northern Alaska, and as far down the valley of the Missouri River as the rough country extended. They are still to be found in the loftier and wilder parts of this territory, but remain numerous only about the head-waters of the Yellowstone and thence northward. Their home is upon the loftiest parts of the ranges, where they find plentiful pasturage between the highest growth of timber and the snow or ice of the summits, and upon the elevated and rocky plateaus of the Bad Lands of Dakota. In summer they wander about a good deal in small flocks, climbing to the highest points, where a wide outlook enables them to see quickly the approach of an enemy and where they are least troubled by flies. In winter they are forced to descend somewhat, but rarely enter the forest, finding shelter against the storm in the mountain gorges and sufficient dried grass upon the wind-swept ridges. Its principal enemy, in the old days, were the pumas and Indian hunters, whose constant pursuit taught it an alertness and wariness which now makes it one of the most difficult animals for the sportsman to approach. The speed, agility and endurance of this mountaineer are equal to that shown by any wild sheep or goat of the Alps or the Himalayas, and equally tax the skill and patience of the hunter. Its horns therefore are highly valued as trophies, and its flesh is universally regarded as the best of all Western game.

The common Rocky Mountain big-horn (*Ovis cervina*) is a strongly built sheep, standing up to 40 inches high. In color, in its summer coat, it is tawny yellow, and in winter grayish brown, with the face ashy and a dark line along the spine. The under parts and a conspicuous roundish patch on the buttocks are whitish. The horns of the ram are of large circumference at the base and thick and rugged, with a distinct keel at the outer edge, and sweep around backward into a spiral, which is complete in the largest specimens and will measure 40 to 42 inches along the outer curve. A smaller and paler variety of Utah and Idaho is called Nelson's big-horn. In the mountains of British Columbia is found Stone's big-horn, which is larger in size and much darker in color (almost black, indeed), with comparatively slender horns. A third species, Dall's sheep, belonging to the mountains of central Alaska, is perfectly white, with horns of moderate size and of a clear amber color. A fourth species, also Alaskan, may prove to be a variety of Dall's, which it resembles, except that a mantle of brownish-gray covers the body, as if a blanket were laid across its back. This last species has been named Fannin's sheep. All these sheep breed once a year, at the beginning of warm weather, usually producing two kids at a birth. They are hardly separable from the argalis of northeastern Asia, and doubtless all are descendants from the same primitive stock. Consult Baillie-Grohman, 'Fifteen Years' Sport and Life in the Hunting Grounds of Western America' (1900); Mayer, 'Sport with Rod and Gun' (1892); Roosevelt, 'Hunting Trips of a Ranchman' (1883). See also SHEEP.

**BIG HORN MOUNTAINS.** This outlying range of the Rocky Mountains extends north through the north-central part of Wyoming and terminates in southern Montana. Its length is about 120 miles and width varies from 30 to 50 miles. It is a rugged barrier between the Great Plains on the east and Big-horn Basin on the west, above both of which its higher portions rise 7,000 to 9,000 feet. Its highest summit, Cloud Peak, is 13,165 feet above sea-level. Several small glaciers lie in the shadow of the higher peaks and formerly these ice masses were of considerably greater extent. The mountains are due to a great uplift in the earth's crust, an arch whose crest has been truncated by erosion, leaving an elevated central area of Archæan granite with flanking ridges of Cambrian, Ordovician and Carboniferous sandstone and limestone. The central area of granite presents remarkably fine Alpine scenery, and all through the mountains are large running streams teeming with trout. Most of the higher region is heavily forested and is embraced in the Bighorn Forest Reservation. No important mineral resources have been developed. For description consult United States Geological Survey, folios

141 and 142, and Professional Paper 51, all by N. H. Darton.

**BIG HORN RIVER**, a river of Montana and Wyoming. It rises in the Rocky Mountains near Fremont's Peak, and flows northeast into the Yellowstone. Along its course is some of the grandest mountain scenery in the world. It is navigable in its lower course, has a total length of about 450 miles and drains an area of approximately 20,000 square miles. At its junction with the Little Big Horn is Fort Custer.

**BIG JAW, or LUMPY JAW.** See ACTINOMYCOSIS.

**BIG RAPIDS**, Mich., city and county-seat of Mecosta County, on the Muskegon River, the Père Marquette and other important railroads, 56 miles north of Grand Rapids. The river is here dammed in two places, providing a very valuable water-power. The city has the Holly system of waterworks and an extensive trade in lumber and manufactures of furniture, sash, doors and blinds, coiled elm hoops, shingles, veneer, etc. Among the noteworthy institutions is the Ferris Industrial School. There are daily and weekly newspapers, a private bank, several hotels, a public library, hospital, theatre and courthouse. Big Rapids was settled in 1859 and incorporated as a city in 1869. It is now governed under the commission-manager plan. Pop. 5,000.

**BIG SANDY RIVER**, a stream forming the boundary between West Virginia and Kentucky and flowing into the Ohio, having two confluent forks, Tug Fork that rises in West Virginia, and West Fork that rises in Kentucky. For small or flat-bottomed boats 100 miles of its lower course are navigable. Portions of the area which it drains (over 4,000 square miles) have long been regarded as of special interest on account of their mineral products.

**BIG SIOUX**, soo, a stream of South Dakota, uniting with the Missouri about two miles above Sioux City, after a course of 300 miles.

**BIG SISTERS, The.** This movement was incorporated on 12 June 1912. It was organized about three years prior to this date by Mrs. Wm. K. Vanderbilt. It is a movement to enlist the personal interest in behalf of unfortunate girls (particularly those coming before the Children's Court) and also small children brought before the court because of improper guardianship. There is a staff of three paid workers, supplemented by the volunteer Big Sisters who, through their personal interest, try to give to the Little Sisters friendship and opportunities which are their due, thereby laying the foundation for better citizenship. When a girl is brought before the court an endeavor is made to find the cause of the difficulty and then, with the co-operation of the parents or of any possible social or religious agency, the Big Sister endeavors so to change conditions as to make them constructive and not destructive. The organization is supported entirely by voluntary contributions.

**BIG SPRING**, Texas, town and county-seat of Howard County, 270 miles west of Fort Worth, on the Texas & Pacific Railroad. It is of importance as a railroad town, the division shops and offices of the Texas & Pacific Railroad being situated here. It carries on an active trade in live-stock, hides, fruit, lumber, cotton and agricultural products. Extensive deposits of salt are found underlying the region and in the neighborhood is the great spring for which the town is named. The city contains cotton gins, an ice plant, fine school buildings, a hospital and public library. The waterworks are the property of the city. Pop. 4,102.

**BIG STONE GAP**, Va., town in Wise County, 175 miles southwest of Charleston, on the Louisville and Nashville and the Virginia and Southwestern railroads. The town contains a large government building, a public park, a museum and Bee Rock Tunnel. It has lumber and mining interests but is chiefly a place of residence. Pop. 2,590.

**BIG STONE LAKE**, a body of water on the boundary between South Dakota and Minnesota, drained by the Minnesota River. It is about 25 miles long.

**BIG TREES.** See SEQUOIA.

**BIG WOODS**, a wooded tract in the southeast part of Minnesota, extending south from Saint Cloud to Le Sueur, where it crosses the Minnesota and sends branches toward Faribault and Mankato. It is 100 miles long and from 10 to 40 miles wide, covering 5,000 square miles, four-fifths of which lie north of the Minnesota. This great belt of hardwood timber is one of the most valuable forests in the West.

**BIGAMY**, in the canon law, means being twice married; in the common acceptation of the word, as a term of ordinary law, it means the being married to two wives or husbands at the same time. The laws relating to plurality of wives or husbands might be supposed to come strictly under the head of polygamy; but, as it constitutes an offense against these laws to have more than one husband or wife, they are usually brought under that of bigamy. The laws of every civilized society make some provision respecting this subject. By the statute of 4 Edward I, stat. 3, cap. 5, the marrying of a second husband or wife, the first being alive, was made felony; and by that of 2 James I, cap. 11, this crime was made punishable by death. But the same statute provided that, where either party was absent beyond seas for seven years, whether known or not known to the other party to be alive, or was absent, though not beyond seas, for the same period and not known by the other party to be alive, the other party was at liberty to marry again. Now, however, one of the parties is not held guiltless unless the other was absent continuously for seven years and was not known to be alive. The penalty has been lessened by subsequent enactments, and the guilty party is now liable to penal servitude for seven years or not less than five, or to be imprisoned, with or without hard labor, for not more than two. Every person aiding or abetting the bigamist is held to be equally guilty and may receive the same punishment. By a Scottish statute of 1551 bigamy was made punishable as perjury — that is, with confiscation of goods, imprisonment and infamy; now imprisonment is the usual sentence, but in some cases penal servitude is inflicted. If the accused had reasonable ground for believing the first spouse dead, he

is not guilty of the crime; and if the first marriage was void for any reason or dissolved by divorce, the second is not bigamous. In Scottish law, too, it is not necessary that either marriage should be regular for bigamy to be committed. The statute of James I has been adopted in most of the United States as to the description of the crime, but the State laws generally differ from it as to the penalty, having assigned, heretofore, instead of death, as provided by the English statute, the punishment of imprisonment and hard labor for a number of years, according to the discretion of the court; others leaving it to the verdict of the jury to fix the period of imprisonment.

The New York statutes against bigamy are substantially similar to those in nearly all the States of the Union. These statutes provide that any person who, having a husband or wife living, marries another person, is guilty of bigamy and is punishable in State's prison or a penitentiary for not more than five years. The statute does not extend to a person whose former husband or wife has been absent for five years successively, without being known to him or her within that time to be living and believed by him or her to be dead, or to a person whose former marriage has been pronounced void or annulled or dissolved by the judgment of a court of competent jurisdiction for a cause other than his or her adultery, or to a person who, being divorced for his or her adultery, has received from the court which pronounced the divorce permission to marry again, or to a person whose former husband or wife has been sentenced to imprisonment for life. A person who knowingly enters into a marriage with another which is prohibited to the latter by the statute is punishable by imprisonment for not more than five years, or by a fine of not more than $1,000, or both. Consult Stephen, 'Digest of the Criminal Law' (5th ed., London 1894); Phillmore, 'Ecclesiastical Law of the Church of England' (London 1895); Eversley, 'Law of the Domestic Relations' (London 1896).

**BIGELOW, Edith Evelyn** (JAFFRAY), American novelist: b. New York, 23 Dec. 1861; married Poultney Bigelow (q.v.) 1884. She has published 'Diplomatic Enchantments' and several novelettes.

**BIGELOW, Edward Fuller,** American editor and naturalist: b. Colchester, Conn., 14 Jan. 1860. He received his preparatory education at Bacon Academy, Colchester; was a special student at the Biological Laboratory, Yale University, 1896–97; student at the Biological Laboratory, Cold Spring Harbor, L. I., 1899; also studied at Nature Study School, Cornell University; A.M., Ph.D., Taylor University, 1899. He was editor of nature and science departments of *Saint Nicholas Magazine* 1900–14; is now editor of *The Guide to Nature;* was editor of *Popular Science* for three years, of the *Observer* eight years and of weekly and daily newspapers in Connecticut for eight years. For 10 years he was a teacher in public schools, most of that time as principal of graded schools. For the past 25 years he has taken, yearly, about 4,500 boys and girls on natural history excursions. He has been instructor in nature-study at university summer schools in Ohio, Michigan, North Carolina, Alabama, Indiana, Iowa, etc.; is the inventor of chemical tablets for the artificial nutriment of plants (1901) and of an educational bee-hive (1905); was elected president of the Agassiz Association (1907). Publications, 'Bigelow's Descriptive Plant Analysis'; 'How Nature Study Should Be Taught'; 'Walking, A Fine Art'; 'The Spirit of Nature Study' (1907).

**BIGELOW, Erastus Brigham,** American inventor: b. West Boylston, Mass., 2 April 1814; d. Boston, 6 Dec. 1879. His name is prominent in the early development of the American textile industries, his inventions including looms for suspender webbing, pipping cord, knotted counterpanes, carpets, coach laces, etc. He was also one of the original incorporators of the Massachusetts Institute of Technology. He wrote 'The Tariff Questions Considered in Regard to the Policy of England and the Interest of the United States' (1863).

**BIGELOW, Frank Hagar,** American clergyman and meteorologist: b. Concord, Mass., 28 Aug. 1851. He was graduated at Harvard in 1873 and at the Episcopal Theological School at Cambridge in 1880; was ordained in 1880. He was assistant astronomer at the observatory in Córdoba, Argentina (1873–76 and 1881–83), and afterward was successively professor of mathematics in Racine College (Wisconsin) (1849–89) and assistant in the *Nautical Almanac* office, Washington, D. C. In 1891 he was appointed a professor of meteorology in the United States Weather Bureau, and in 1894 professor of solar physics at the Columbia University. He also became, in 1891, assistant rector of Saint John's Church, Washington, and in 1898 was president of the Washington Philosophical Society. In 1904 he was made a member of the International Commission on Solar Physics and Meteorology. He became professor of meteorology at the Argentine Meteorological Office in 1910, and in 1915 director of the Pilar Solar and Magnetic Observatory. He invented an instrument for obtaining photographic records of stellar transits and endeavored to prove a connection between terrestrial magnetism, the aurora and the solar corona. He published an important monograph on the 'Solar Corona' (1899); 'Studies on the Thermodynamics of the Atmosphere' (1907); and bulletins on evaporation, the radiation of the atmosphere and synchronism between solar phenomena and terrestrial meteorology (1911–13); 'The Daily Normal Temperature and the Daily Normal Precipitation of the United States' (1908); 'Treatise on Atmospheric Circulation and Radiation' (1915).

**BIGELOW, Jacob,** American physician: b. Sudbury, Mass., 27 Feb. 1787; d. Boston, 10 Jan. 1879. He was graduated at Harvard College 1806 and began medical practice in Boston in 1810. He early became known as a botanist, and a number of plants were named for him by Sir E. J. Smith in the supplement to 'Rees' Cyclopædia,' by Schrader, in Germany, and De Candolle in France. He founded Mount Auburn Cemetery in Cambridge, the first garden cemetery established in the United States. He was professor of materia medica in Harvard College in 1815–55 and Rumford professor there in 1816–27. His works include 'Useful Arts

Considered in Connection with the Applications of Science' (1840); 'Florula Bostoniensis' (1824); 'American Medical Botany' (1817–20); 'Nature in Disease' (1854); 'A Brief Exposition of Rational Medicine'; 'The Paradise of Doctors, a Fable' (1858); 'History of Mount Auburn' (1860); 'Modern Inquiries,' and 'Remarks on Classical Studies' (1867).

**BIGELOW, John,** American author: b. Malden, N. Y., 25 Nov. 1817; d. 1911. He was graduated at Union College in 1835, and became first a lawyer and afterward a journalist. In 1845–46 he was inspector of Sing Sing prison; in 1849–61 one of the editors of the New York *Evening Post;* in 1861–64 United States consul-general at Paris, and in 1864–67 Minister to France. He was secretary of State of New York 1875–77. From August 1886 he was one of the three trustees and on 27 May 1895 was elected president of the consolidated board of trustees, and appointed chairman of the executive committee of the New York Public Library, Astor, Lenox and Tilden Foundations. His works include 'Molinos the Quietist'; 'France and the Confederate Navy'; 'Life of William Cullen Bryant'; 'Life of Samuel J. Tilden'; 'Some Recollections of Edouard Laboulaye'; 'The Mystery of Sleep'; 'A Life of Franklin.' In 1885 he published 'The Writings and Speeches of Samuel J. Tilden,' and in 1888, 'The Complete Works of Benjamin Franklin.' Consult Bigelow, J., 'Retrospections of An Active Life' (2 vols., New York 1909).

**BIGELOW, John,** American military officer and author, son of the preceding: b. New York, 12 May 1854. He was educated in Paris, Bonn, Berlin, Freiberg, and Providence, R. I.; was graduated at the United States Military Academy in 1877; and was assigned to the 10th United States Cavalry. In 1887–89 was adjutant-general of militia in the District of Columbia; and in 1894–98, professor of military science at the Massachusetts Institute of Technology. During the war with Spain he was wounded in the attack on San Juan, Cuba, 1 July 1898. He retired from active service at his own request in 1904. From 1904 to 1910 he was professor of French at the Massachusetts Institute of Technology, and from 1906 to 1910, in active military service on the staff of the governor of Massachusetts. He published 'Mars-la-Tour and Gravelotte' (1884); 'Principles of Strategy, Illustrated Mainly from American Campaigns' (rev. ed., 1894); 'Reminiscences of the Santiago Campaign' (1899); 'The Campaign of Chancellorsville' (1910); 'American Policy, the Western Hemisphere in Its Relation to the Eastern' (1914); 'World Peace, How War Cannot Be Abolished, How It Possibly May Be Abolished' (1915).

**BIGELOW, Marshall Train,** American printer and proofreader: b. South Natick, Mass., 5 Oct. 1822; d. Cambridge, Mass., 28 Dec. 1902. In 1843 he became associated with the University Press in Cambridge, the firm name of which from 1859 to 1879 was Welch, Bigelow & Company. He was long classed as one of the most competent of American proofreaders. He published 'Punctuation and Other Typographic Matters' (1881); 'Mistakes in Writing English and How to Avoid Them' (1886).

**BIGELOW, Maurice Alpheus,** American biologist: b. Milford Centre, Ohio, 8 Dec. 1872. Graduating from Harvard University, he became instructor in biology at Ohio Wesleyan continuing in this position at Northwestern University the following year. In 1899 he was appointed instructor in biology at Columbia University, becoming professor in 1907. Besides being editor of the *Nature Study Review,* from 1905 until 1911, he has written 'The Early Development of Lepas' (1902); 'The Teaching of Zoology in the Secondary School' (1904); 'Applied Biology' (1911); 'Teacher's Manual of Biology' (1911); 'Introduction to Biology' (1913).

**BIGELOW, Melville Madison,** American lawyer: b. Eaton Rapids, Mich., 2 Aug. 1846. He was graduated at the University of Michigan 1866 and in 1870 removed to Boston. He received the degree of Ph.D. at Harvard 1879, and LL.D. Northwestern University 1896. He was lecturer in the law department of the University of Michigan, and in Northwestern University Law School; was professor in and sometime dean of Boston University Law School, is a member of the Massachusetts Historical Society, and of Harvard Chapter Phi Beta Kappa; fellow of the American Academy of Arts and Sciences. His works include 'The Law of Estoppel' (1872); 'Leading Cases in the Law of Torts' (1875); 'The Law of Torts' (8th ed., 1907); 'Placita Anglo-Normannica' (1879); 'History of English Procedure' (1880); 'The Law of Fraudulent Conveyances' (2d ed., 1911); 'The Law of Bills, Notes and Cheques' (2d ed., 1900); 'The Law of Wills' (1898); joint author 'Centralization and the Law' (1906); 'A False Equation—The Problem of the Great Trust' (1911). His works are in use in law schools throughout America, in England, China, Japan, India and South America.

**BIGELOW, Poultney,** American author: b. New York (son of John Bigelow) 10 Sept. 1855. After a cosmopolitan training in the United States, France and Germany where Emperor William II was his fellow pupil in 1871–72, their friendship persisting until 1896, when the Jameson raid ranged Mr. Bigelow in political opposition to the anti-English policy of Germany, he was graduated at the Norwich Academy 1873, at Yale University 1879, and from the Columbia Law School 1882. In 1875–76 he made a voyage around the world in a sailing-ship which was wrecked on the coast of Japan. Admitted to the bar in 1882, he abandoned the law, after a few years, for journalism and travel in China, Africa, the West Indies, Borneo, Australia, New Guinea, Russia and India, the while collecting material for studies on colonization. He was the first to take a canoe through the Iron Gates of the Danube and was the founder and first editor of *Outing,* the first American magazine of amateur outdoor sport 1885–87; was lecturer at principal universities on modern history and colonial administration; was correspondent of the London *Times* in the Spanish-American War 1898. In 1906 he returned from his 4th voyage round the world and retired to Malden-on-Hudson, the birthplace of his father, where he devotes his time to rural and literary pursuits. He has published 'The German Em-

peror' (1889); 'The German Emperor and His Eastern Neighbors' (1892); 'Paddles and Politics down the Danube' (1892); 'The Borderland of Czar and Kaiser' (1894), in gathering the materials for which he was expelled from the Russian Empire; 'History of the German Struggle for Liberty' (4 vols., 1896; new ed., 1912); 'White Man's Africa' (1898), and 'Prussian Memories' (1915).

**BIGELOW, Robert Payne,** American zoologist: b. Baldwinsville, N. Y., 10 July 1863. He was graduated at Harvard in 1887 and studied at Johns Hopkins 1889–93. In 1893 he became instructor in biology at the Massachusetts Institute of Technology; was made librarian in 1895, assistant professor in 1912, and associate professor in 1915. He has written a number of papers on zoological subjects and contributed articles to the *Reference Handbook of the Medical Sciences* 1900–04, and 1913.

**BIGELOW, Samuel Lawrence,** American chemist: b. Boston, 23 Feb. 1870. Graduating from Harvard and the Massachusetts Institute of Technology, he took a post graduate course at Leipzig. After serving as instructor at the University of Michigan from 1898 until 1901, he became acting director of the laboratory of general chemistry. In 1907 he was made professor of chemistry in the same institution. Among his works are 'Denatured Alcohol' (1907); 'Theoretical and Physical Chemistry' (1912).

**BIGELOW, Timothy,** American military officer: b. Worcester, Mass., 12 Aug. 1739; d. there, 31 March 1790. He was a blacksmith by trade, was a member of the Provincial Congress of 1774–75 and on 23 May 1775 he led a company of minute-men to Cambridge, and became major in Ward's regiment. He was under Arnold in the expedition to Quebec in 1775, and was there captured, remaining a prisoner till 1776. He became colonel in 1777, and assisted in the capture of Burgoyne. He also saw service at Valley Forge, Monmouth, West Point and Yorktown.

**BIGELOW, Timothy,** American lawyer (son of the preceding): b. Worcester, Mass., 30 April 1767; d. 18 May 1821. He was graduated at Harvard College in 1786, was admitted to the bar, and settled in practice at Groton, Mass., in 1789. He took an active part in politics as a Federalist, was for 20 years a member of the State legislature, and 11 years speaker of the House of Representatives, and a member of the Hartford Convention. In 1807 he removed to Medford, and kept an office in Boston. His legal standing and practice were at the head of his profession in his time; and in the course of 32 years, he was supposed to have argued 10,000 causes.

**BIGELOW, Willard Dell,** American chemist: b. Gardner, Kan., 31 May 1866. Graduating from Amherst College, he was appointed assistant professor of chemistry at the Oregon State College. In 1891 he became chemist in the Bureau of Chemistry in the United States Department of Agriculture; 10 years later he was chief of the Division of Foods and in 1903 he was assistant chief of the Bureau. On account of the resignation of his chief, Harvey W. Wiley, he resigned from this position in 1913. Since then he has been chief chemist of the National Canners' Association. Of the bulletins issued by the Bureau he has written 'Pure Food Laws of European Countries affecting American Exports' (1901); 'Preserved Meats' (1902); 'Foods and Food Control' (1902–04); 'Tin Salts in Canned Foods of Low Acid Content' (1911).

**BIGGAR, Hamilton Fisk,** Canadian physician: b. Oakville, Ontario, 15 March 1839. He was educated at Victoria University, and pursued his medical studies at the University of Medicine and Surgery, Cleveland, Ohio. In 1866 he began practice in Cleveland, and in 1867 was made professor of anatomy and clinical surgery in the Homœopathic Hospital College there. Later he was for 10 years professor of clinical surgery, with operations in the same college. In 1900 he held the chair of surgical diseases of women and clinical surgery. Dr. Biggar founded the Cleveland Training School for Nurses, where he was dean for 10 years. He wrote 'Twelve Months of Surgery'; 'Loiterings in Europe,' etc.

**BIGGAR, Henry Perceval,** Canadian historical writer: b. Carrying Place, Ontario, 9 Aug. 1872. He was educated at Belleville Public School, and the universities of Toronto (B.A. 1894), Paris and Oxford. He was the Mackenzie fellow in political science at Toronto University 1900–02. In 1907 he was appointed European representative of the Canadian Archives. He is the author of 'The Early Trading Companies of New France' (Toronto 1901); 'The Voyages of the Cabots and of the Corte-Reals to North America and Greenland, 1497–1503' (Paris 1903); 'The Precursors of Jacques Cartier, 1497–1534': 'A Collection of Documents relating to the Early History of Canada' (Ottawa 1911).

**BIGGS, Asa,** American jurist: b. Williamston, N. C., 4 Feb. 1811; d. Norfolk, Va., 6 March 1878. He received an academical education, and was admitted to the bar in 1831. He was a member of the North Carolina Constitutional Convention in 1835; was elected to the State legislature in 1840, 1842 and 1844; was a member of the commission appointed to revise the State statutes in 1850, and was again sent to the legislature in 1854. In 1854 he was elected United States senator; resigned in 1858, and was appointed judge of the United States District Court of North Carolina.

**BIGGS, Hermann Michael,** American physician: b. Trumansburg, N. Y., 29 Sept. 1859. He was educated at Cornell University and Bellevue Hospital Medical College. In 1885 he was appointed professor of pathological anatomy in the latter institution. In 1892 he became pathologist and director of the bacteriological laboratories. Nine years later he was appointed general medical officer of the department of health of New York. In 1907 he became associate professor of medicine at the Bellevue Hospital Medical College. Aside from this he was also director of the Rockefeller Institute for Medical Research. In 1913 he was made chief of a board of experts formed to investigate health conditions in the State of New York and the following year he was appointed State Commissioner of Health. He has written 'The Administrative Control of Tuberculosis' (1904); 'An Ideal Health De-

partment' (in collaboration with C. E. A. Winslow, 1913).

**BIGLOW, William,** American educator and poet: b. Natick, Mass., 22 Sept. 1773; d. Boston, 12 Jan. 1844. He was first established as a teacher in Salem, and in 1799 delivered a poem on education before the Phi Beta Kappa Society at Cambridge. He then took charge of the Latin school, Boston, preaching occasionally, writing for different periodicals, and publishing educational textbooks. Here he fell a victim to intemperate habits and was compelled to retire to his home in Natick. In this state of his fortunes it was his habit to lounge about the newspaper offices at Boston, write poetry for his friends, the editors, while the humor lasted, and then return to his rural retreat. He taught, also, a village school in Maine, and in the latter part of his life was employed as a proofreader in the university printing office at Cambridge. He had a genial and pleasant humor, and was a ready versifier, as well as an agreeable prose-writer. His 'Cheerful Parson' and others of his songs were much admired by his contemporaries and are well worthy of remembrance. He also published, in 1830, a 'History of the Town of Natick,' and one of Sherburne, Mass. But his best and most numerous writings were in periodicals, the *Village Messenger,* of Amherst, N. H., which he edited in 1796, the *Federal Orrery,* and Massachusetts *Magazine.*

**BIGLOW PAPERS, The.** Lowell's masterpiece, 'The Biglow Papers,' one of the most delightful books ever written by an American, embodies the best humorous and satirical verse since Byron. The papers, first and second series, are made up of one prose paper and of 19 poems in a variety of metres, aggregating about 3,800 lines, and treat topics suggested by the Mexican and the Civil Wars. They are written in Yankee dialect, and purport to be the spontaneous effusions of a certain Hosea Biglow, a rustic political philosopher and an astonishingly ready versifier, and are edited for publication by his friend and pastor, the Rev. Homer Wilbur. Though the papers vary greatly in length, subject matter and tone, they produce a remarkably uniform impression. The first series was inspired by Lowell's indignation over the Mexican War, while he was in the midst of his labors on the *National Anti-Slavery Standard.* Five numbers were printed in the Boston *Courier,* beginning June 1846, and the four remaining numbers were printed in the *Anti-Slavery Standard,* ending September 1847. All were anonymous. Lowell himself was astonished at the success of his verses, which he had regarded as mere *jeux d'esprit.* Hosea Biglow became a household name, and it was evident that the despised anti-slavery cause had found a powerful champion. When the first series was published in book form in 1848, with the name of the author, Lowell became famous. Fourteen years later, urged by his friends and in response to a widespread public demand, he began the second series, the 11 numbers of which were published in the *Atlantic Monthly* between January 1862 and May 1866. These dealt with slavery, States' rights, the Civil War and national politics in general. Though the second series exhibits the same moral earnestness, and though it contains the best single number of all the 'Papers' ("Sunthin in the Pastoral Line," VI), it is perhaps on the whole not quite so spontaneous and convincing as the first.

Apart from their humor, wit, wisdom and metrical facility, 'The Biglow Papers' are remarkable among satires for their creation of real characters. Hosea Biglow, the shrewd, humorous, frank critic of political conditions, who together with moral earnestness possesses a vein of sentiment and poetry, is a genuine Yankee type. Birdofreedom Sawin, the clown of the piece, an amusing and likable rascal, represents the same Yankee shrewdness, but uncontrolled by moral sense. The Rev. Homer Wilbur embodies the cautious element of the New England character, with something of "the harmless vanity and amiable pedantry of a certain type of New England Clergyman." His elaborate introductions and notes, for all their pedantry and verbosity, are no less delightful in their way, and often no less trenchant, than the winged words of the versifier. Though inconsistently portrayed, he is not unworthy the companionship of the immortal Adams and Primrose.

Lowell's justification for his use of dialect in 'The Biglow Papers' by the plea that he needed a speech more racy than "literary" language, was unnecessary; for the dialect adds meaning and point to his satire; it is redolent of the soil; it helps to express both Hosea and his race. Though Lowell follows "Sam Slick" and other satirists in his use of the New England rustic who discusses politics in dialect, he so far surpasses his predecessors that he actually now seems the first to have given to literature the Yankee dialect and the Yankee rustic. Again, 'The Biglow Papers' reveal Lowell himself, a great personality, fun-loving and fun-making, witty, wise, fearless and patriotic; and also his race, for he is here the spokesman for New England. With such qualities, the 'Papers' have as a whole lost little with the years. Their relation to their times is plain enough to the reader with any knowledge of American history; while their satire on perennial political follies and human foibles and *their* essential poetry and humanity, are as fresh as ever. From the first series, however, the reader is apt to prefer Hosea's views on "recrutin" (I), "B. Sawin's first letter" (II), "What Mr. Robinson Thinks," with its facile refrain, worthy of Gilbert at his best (III), and "The Pious Editor's Creed" (VI); and from the second series, "The Courtin," prefixed to the series and independent of it; "Jonathan to John" (contained in II); that most delightful of New England pastorals, "Sunthin in the Pastoral Line" (VI), in which sentiment and imagination have free play, with little regard to satire or the general purpose of the series; and the poignant verses on the price that we pay for liberty and peace (X). The best edition of 'The Biglow Papers' is that contained in the Cambridge edition of Lowell's complete poetical works, edited by H. E. Scudder.

MARION TUCKER,
*Polytechnic Institute of Brooklyn.*

**BIGNON,** bēn-yōṅ, **Louis Pierre Edouard,** French historian and statesman: b. La Meilleraye, 3 Jan. 1771; d. Paris, 5 Jan. 1841. He entered the National Assembly in 1817; became

a peer of France in 1837, and wrote a 'History of France' (7 vols., 1827–38). He received from Napoleon I. a bequest of $20,000.

**BIGNONIA,** the type genus of the family *Bignoniaceæ,* consisting of more than 100 species of mostly South American tropical climbing shrubs, many of which are raised in greenhouses for their ornamental foliage and handsome tubular flowers of various colors. Some species are used as cordage in South America and are said to be employed in making mats, baskets, etc. The cultivated species are generally of easy management if given good soil, plenty of light, and space for both roots and tops. *B. capreolata,* which has numerous orange-red flowers, is a common climber throughout the South and as far north as Maryland. In favorable soils and situations it often attains heights exceeding 50 feet. It is known as "trumpet-flower" from the shape of its blossoms, and "cross-vine" and "quarter-vine" from the appearance of the cross-section of its stem. It is sometimes confounded with its near relation, *Tecoma radicans,* trumpet-vine.

**BIGORDI,** bē-gôr'-dē, **Domenico,** Italian painter: b. Florence 1146; d. 11 Jan. 1494. He was nicknamed Ghirlandajo, a name already borne by his father, Tommaso. He studied painting and mosaics under Alesso Baldovinetti. At the same time he studied Mosaccio's frescoes. After 1480 he painted a 'Last Supper' for the church of Ognisanti, and soon after he undertook a series of frescoes in the Sasseti chapel in La Trinita. Here he depicted the principal scenes of the legend of Saint Francis, introducing many figures which the Florentine public recognized as some of their well-known contemporaries. He also painted at this time 'The Adoration of the Shepherds,' now in the Academy of Fine Arts. His fame soon reached Rome and he was summoned thither in 1483, to work on the Sistine chapel. Here he painted 'The Vocation of SS. Peter and Andrew' and another work now lost. At Rome he met Francisco Tornabuoni who became his patron. From 1485 to 1490 he was employed in repainting the choir chapel of Santa Maria Novella at Florence. Here Michelangelo was the apprentice of Bigordi and aided his master in the work on the choir chapel, which remains one of the most venerable monuments of Florence. The life of this great artist, one of the most notable precursors of the development which was to follow, was short. He died in 1494 leaving several works unfinished. His two brothers and his pupils undertook to finish them. In fact several of his paintings show traces of a strange hand. Independent of the works mentioned above there are others deserving of mention, such as the 'Visitation' in the Louvre and the 'Old Man and Child' in the Paris Museum. Florence has several works; the convent of Saint Marc's, now a museum, contains a 'Last Supper'; and in the church of Ognisanti there is a Saint Jerome. Ghirlandajo's art represents the highest technical development in his century. As a technician he was one of the greatest of the Florentines. He excelled in composition and draftsmanship and was a good colonist but was deficient in originality. Consult Vasari, 'Lives of the Painters' (10 vols., New York 1913); Crowe and Cavalcaselle, 'History of Painting in Italy' (London 1903); and the monograph by Davies (London 1908).

**BIGOT,** bē-gō, **Charles Jules,** French critic: b. Paris, 14 Sept. 1840; d. 1893. After finishing his studies at the Ecole Normale and the Art School at Athens, he entered journalism and soon became known as a critic. His articles appeared in *XIXe Siècle* and the *Revue Bleu.* Among his larger works are 'Les classes dirigeantes' (1876); 'Le clergé français devant la loi française' (1877); 'Le petit Français' (1882); 'Raphaël et la Farnesine' (1884); 'Grèce, Turquie, le Danube' (1886); 'De Paris au Magara' (1887). His wife, Mary Healey Bigot, an American, is also well known as a writer under the pen name of "Jeanne Mairet."

**BIGOT, François,** French colonial administrator: b. Bordeaux, 30 Jan. 1703. He became commissary of marine at Rochefort, 1731; ordonnateur at Louisbourg in 1739, where he began that career of peculation which only ended with the ruin of French Canadá. After the capture of Louisbourg by the English, he returned to France, and was appointed intendant of Canada in 1748. His administration of the finances was marked by the grossest corruption, the colony being exploited in the most shameless way for the benefit of himself and his associates. On his return to France after the conquest, he was brought to trial, sentenced to make restitution and to suffer banishment; but the sentence of banishment was not carried out, and he was permitted to end his days in Bordeaux. The date of his death is unknown.

**BIHACS, or BIHATCH,** bē-hätch', Bosnia, fortress and town on an island of the Una, about 50 miles east of the Adriatic. It has a low and unhealthful site, but is remarkable for its strength. In 1592 the Turks converted its Gothic church into the Fethija Mosque. The possession of it has often been keenly contested during the Turkish wars. In the autumn of 1878 the Bosnian insurgents successfully defended the town against the Austrians. Pop. 4,700.

**BIHAR AND ORISSA,** India, a northeastern province reconstituted in 1912 from the native states of Bihar, Orissa and Chota Nagpur, formerly feudatory to the presidency of Bengal (q.v.). Total area 83,181 square miles; population 34,490,184, comprising Bihar, 42,361 square miles, 23,752,969 population; Orissa, 13,743 square miles, 5,131,753 population; Chota Nagpur, 27,077 square miles, 5,605,362 population.

**BIHÉ,** bē-hā', Portuguese West Africa, a fruitful district lying east of Benguela, in the colony of Angola. It is an important caravan centre, as the only route across the continent passes through it. Area, 3,900 squares. Pop. 95,000.

**BIJAPUR,** bē-ja-pōr', India, a decayed city in the Bombay presidency, 160 miles southeast of Poona. It was for centuries the flourishing capital of a powerful kingdom, but fell therewith under various dynasties in succession, Hindu and Mussulman, till in 1686 it was captured by Aurungzebe. It passed, during the early part of the 18th century, into the hands of the Mahrattas, and became British in 1848. Now that a gradual decay has done its worst,

Bijapur presents a contrast perhaps unequaled in the world. Lofty walls of hewn stone, still entire, enclose the silent and desolate fragments of a once vast and populous city With the exception of an ancient temple, the sole relic of aboriginal domination, the ruins are Mohammedan, and consist of beautiful mosques, colossal tombs, a fort, with an inner citadel, a mile in circuit. The British government has done everything to prevent further decay.

**BIJNS,** bīnz, **Anna,** Flemish poet: b. Antwerp 1494; d. there, 10 April 1575. She was the first Flemish writer of the 16th century. Much admired for her melodious verses, full of metaphors and showing great technical skill, she was styled the "Brabantine Sappho" by her contemporaries. Many of her poems were directed against Luther and his followers. The first of her volumes of collected verse bore the title 'This Is a Beautiful and Truthful (or Sincere) Little Book,' while a second is known as 'Spiritual Refrains.' Consult her 'Schoone Refereynen Schruftueren ende Leeringen teghen Tall Kettereyen' (1528; with commentaries by Van Helten and Jonckbloet 1876). In 1886, Van Helten published a collection of 94 of her other poems.

**BIKANIR,** bē-kä-nēr', India, a native state of Rājputāna, under the superintendence of a political agent and the governor-general's agent for Rājputāna, lying between lat. 27° 12′ and 30° 12′ N. and long. 72° 12′ and 75° 41′ E.; area, 23,311 square miles; pop. (1911) 700,893. The surface is for the most part undulating sandhills; there are no forests, and for want of water trees are scarce. Two canals form the only irrigation works. The climate is generally dry and healthful, but is characterized by great extremes of temperature. Coal is the principal mineral; woolen fabrics, pottery and lacquer work form the chief native industries. Famine took nearly half of the population in 1868–69, and there were visitations in 1891–92 and 1899–1900.

**BIKANIR,** India, capital of the above state, 250 miles west-southwest of Delhi, an irregularly built city surrounded by a fine battlemented wall four and a half miles in circuit, six feet thick and from 20 to 30 feet high. It has a fort, containing the Rajah's palace, and manufactures blankets, sugar candy, pottery, etc. It contains 10 Jain monasteries, 160 temples and nearly 30 mosques. Pop. 55,826.

**BIKELAS,** bē-kā'las, **Dimitrios,** modern Greek poet and historian: b. Hemopolis, island of Syra, 1835; d. Athens, 21 July 1908. After completing his studies he went to London, where his parents had settled, and after 1874 lived in Paris. After publishing a collection of his poems in 1862, he devoted himself to the task of making Shakespeare's dramas known in Greece through excellent metrical translations. As a prose-writer he has won wide reputation with his tale, 'Lukis Laras' (1879), which was translated into 13 languages. His historical writings include 'The Greeks of the Middle Ages' (1878); 'The Rôle and the Aspirations of Greece in the Eastern Question' (1885); 'Greece, Byzantine and Modern' (1893).

**BIKU'KULLA** (Greek for "double-hooded"), a genus of plants of the fumitory family (*Fumariaceæ*). The genus numbers about 15 species, natives of North America and western Asia. The best-known American species are the Dutchman's breeches (*B. cucullaria*), and wild bleeding-heart (*B. eximia*). The common squirrel-corn (*B. canadensis*) is also a member of the genus. The Dutchman's breeches grows in woods from Nova Scotia to Lake Huron and Washington, south to North Carolina and Missouri. Wild bleeding-heart is found in rocky places from the western part of New York, south to Georgia and Tennessee, along the mountain ranges. The best-known Asiatic species is *B. spectabilis,* bleeding-heart, a native of northern China and the neighboring parts of Siberia, which was discovered in 1810, and is now everywhere common as a garden plant. It blossoms in April and May, and its long drooping racemes of purplish-red blossoms present a very graceful appearance.

**BILASPUR,** British India, town of the Central Provinces and capital of the administrative district of Bilaspur. It is situated on the Bengal and Nagpur Railroad and the Arpa River. It is in the centre of one of those poorer districts in which the irrigation canal system has been as yet least developed and famines are frequent. The chief crop is rice. Pop. including the entire administrative district, 1,146,223.

**BILBAO,** bēl-bä'o, Spain, capital of the province of Viscaya (q.v.) or Bilbao, situated on the navigable Nervion, in a plain surrounded with high mountains, a few miles from the sea. The river is crossed by five bridges. The town is picturesque and well built and contains several good churches, two fine promenades, a theatre, a marine school, etc. Bilbao carries on important trade and manufactures (the latter consisting chiefly of sailcloth, ropes and leather, hats, tobacco and earthenware) and possesses large shipyards and iron-foundries, iron and steel works, etc. It is one of the most flourishing seaports of Spain, though its accommodation for shipping is defective, and it is the seat of a United States consul. Various harbor improvements, however, have recently been carried out, including a breakwater and mole. Bilbao exports much iron ore (especially to the United Kingdom), also pig-iron, wool, wine, fruits, oil, flour, grains, madder, licorice, etc.; the imports are manufactured goods, dried fish, timber, coal, hardware, etc. Its supply of water and sanitary arrangements are not good. Its prosperity is due to the valuable iron mines nearby. The city was founded in 1300 by Diego Lopez de Haro as "Belvao," or "fine ford." It was an important commercial centre in the 14th and 15th centuries but suffered in the wars with France in 1795 and 1808. It was besieged by the Carlists in 1833–35 and 1872–76. Pop. 92,514. Consult Guiard Larrauri, 'Historia de Bilbao' (Bilbao 1905).

**BILBERRY.** See HUCKLEBERRY.

**BILBILIS,** Spain, an old Celtiberian city, two miles east of the modern town of Calatayud, in the province of Saragossa, chiefly celebrated as the birthplace of the poet Martial, but also famed for its highly-tempered steel blades. In the Roman period it was a municipium with the surname of Augusta and had the right to coin money.

**BILDAD**, "the traditionalist": one of the leading characters in the book of Job. See JOB.

**BILDERDIJK**, bil'der-dēk, **Willem**, Dutch poet: b. Amsterdam, 7 Sept. 1756; d. Haarlem, 18 Dec. 1831. Graduating from the University at Leyden where he had studied law, he began a private practice, devoting himself also to the writing of verse. While still very young he became famous as a poet. On account of political activities objectionable to the government he was exiled from Holland in 1795, after he lived for a while in England and later in Brunswick. In the latter place he gained some notoriety on account of a scandal in which the name of Katherina Schweikhardt was involved, herself an author of some repute. They were later married. Bilderdijk returned to Holland in 1806 and became state librarian, under the patronage of King Louis Napoleon. In 1817 he went to Leyden, where he lectured for 10 years on history. In 1827 he settled in Haarlem, where he remained for the rest of his life. His poetic masterpiece is 'The Destruction of the First World' (1820), but he has written a voluminous mass of other matter. Among his other works are 'Dood van Edipus' (1789); 'Mijn verlustiging' (1781); 'De geesten wereld' (Amsterdam 1843). On account of his politics, which were ultra conservative, he was for a time very unpopular among his countrymen. Consult Gorter's 'Bilderdijk' (Amsterdam 1871).

**BILE**, the most important secretion of the liver. It is formed directly by the liver cells, largely from the blood, is collected by the bile ducts, and discharged through the hepatic ducts. Most of the bile is stored in the gall-bladder, from which it is discharged in man by the cystic duct and the common duct into the upper portion of the duodenum, four inches below the lower end of the stomach. As first secreted in man it is a clear limpid fluid, but in the gall-bladder it is mixed with mucin and becomes darker, varying from dark brown to greenish, according to the amount of oxidation of the bile pigments. The bile of the carnivora is usually yellowish in tint, that of the grass-eaters greenish, but the colors vary widely, dependent on the oxidation.

Bile is an alkaline fluid with a bitter taste, and contains water, bile acids, bile pigments, traces of lecithin, cholesterin, soaps and fats, and mineral salts. The proportions of these are very variable. The acids are known as glycocholic acid, yielding glycocoll and cholalic acid, and taurocholic acid, yielding taurine and cholalic acid. The pigments are two, bilirubin and biliverdin, and the color is a compound of the colors of these two and varies with the proportion of each from reddish-brown to grass-green. They are thought to be derived from the hemoglobin of the blood. The functions of bile are not clearly understood, but it seems to aid in the digestion of fats; it is an important organ of excretion, getting rid of many broken down products of metabolism, notably the cholesterin and lecithin. It is an efficient antiseptic, reducing the amount of excessive fermentation in the intestines, it aids in peristalsis and thus overcomes constipation, and perhaps has other functions connected with proteid digestion. The amount of bile secreted daily varies from 25 to 35 ounces, its secretion is more or less uniform, but at the digestive periods the stored bile of the gall-bladder is added to the intestinal contents. Gall-stones result from concentration of the bile in the gall-bladder. They are also formed as a process of infection of the gall-bladder that creeps up from the duodenum. Gall-stones following typhoid fever are very common, and are probably formed in this manner. As a result of inflammation of the stomach and duodenum the common duct sometimes is inflamed and its walls swollen. This prevents the escape of bile into the intestines, and the bile pigments are taken up by the blood and cause the familiar symptom of jaundice (q.v.). The specific gravity of bile is 1.026. The bile of salt-water fish contains potash; that of land and fresh-water animals contains soda. Biliousness, so called, is rarely an affection of the liver, but much more often a mild inflammation of the stomach and intestines, with catarrhal obstruction of the common duct that is not severe enough to dam back the bile entirely. Clayey stools are usually indicative of deficient bile-elimination. The best-known stimulants of bile-formation and bile-elimination are heat and the biliary acids themselves. The vast majority of the numberless patent liver-pills on the market have no influence on the liver whatever; they are simply cathartics and empty the bowels. Consult Schaefer, 'Physiology' (1898). See DIGESTION; GLYCOGEN; JAUNDICE; LIVER.

**BILFINGER, Georg**, (gā-orH'), **Bernhard**, German philosopher and mathematician: b. Kanstadt, Würtemberg, 23 Jan. 1693; d. Stuttgart, 18 Feb. 1750. He was born with 12 fingers and 12 toes, and submitted to an operation which removed the deformity. He studied with Wolff at Halle and became a disciple of the school of Wolff and Leibnitz. He was made professor of philosophy in 1721 and of mathematics also in 1724. In 1725 he received an invitation from Peter the Great to the chair of logic and metaphysics in the college at St. Petersburg. He now solved the problem of the cause of gravity proposed by the Academy of Sciences at Paris, and gained the prize. Being recalled in 1731 by Duke Charles Edward of Würtemberg he returned to Tübingen and proceeded to lecture on theology; here his originality in style and ideas soon made him popular, and in 1735 he was appointed a privy councillor. Here he displayed great administrative ability and by severe study soon became as celebrated for his political and statistical knowledge as for his scientific attainments. He afterward paid particular attention to agriculture and promoted the culture of the vine. He was the author of numerous theological and philosophical works, including 'Dilucidationes philosophicæ de deo, anima humana, mundo' (1725; 3d ed., 1746), an able defense of Wolff's division of metaphysics.

**BILGE**, a term in naval construction, the very bottom of a ship, inside the vessel and above the keel. BILGE BLOCKS, those blocks on which a ship rests in dry dock and which maintain its upright position. BILGE KEEL, strips which are fastened to the side of a ship below the water line to check her rolling. BILGE KEELSON, a stiffening plate or timber fastened inside the bilge of a ship. BILGE WATER, water which seeps in through the cracks and seams of a

ship's bottom, especially wooden ships, and collects under the flooring. Unless constantly pumped dry, the water here collected becomes stagnant and acquires a bad odor. BILGEWAYS, those timbers on the launching ways on which rests the structure which supports the ship being built.

**BILGUER**, bĭl'gwĕr, **Paul Rudolf von**, German chess-player: b. Schwerin 1808; d. Berlin, 6 Oct. 1840. He entered the Prussian army in 1833, and shortly afterward was promoted lieutenant. On 18 March 1840, he performed at Berlin the curious feat of playing three games at once with as many different opponents, conducting two of the contests without seeing the boards and men. This intense mental effort is supposed to have been the primary cause of the illness which resulted in his death. His 'Chess Handbook' (Berlin 1841 and 1852), completed after his death by his friend T. Heydebrandt von der Lasa, made an epoch in the history of chess, and is still the best practical work on that game. Another work from his hand is 'Das Zweispringerspiel im Nachzuge.'

**BILHAH**, in Biblical history (1) A Simeonite city the position of which is unknown; also referred to as Balah, Baalah and Baalath. (2) According to Gen. xxix, 29, a slave girl given to Rachel by Laban and by her to Jacob as a concubine. She was the mother of Dan and Naphtali.

**BILHARZIA**, a disease caused by a parasitic worm of which two species are known, the African blood flake, *Schistosoma hæmatobium* and *S. japonicum*, very common in Egypt and south Africa, but rare in the United States. The symptoms are usually those of cystis, or inflammation of the bladder, with bloody urine. The diagnosis is usually made by finding the ova of the worm in the blood, by the microscope. (See PARASITES). Consult Blanchard, R., 'Traité de Zoologie médicale' (Paris 1888).

**BILIMBI, Cucumber-tree** (*Averrhoa bilimbi*), a tropical tree of the family *Oxalidaceæ*, native of southern Asia, where it is largely cultivated and whence it has been introduced in other tropical countries. It is extensively grown in South America. The tree attains a height of 60 feet, bears racemes of red flowers followed by smooth cucumber-shaped green fruits as large as hen's eggs, which are highly esteemed for their acid pulp. The carambola is a close relative.

**BILIN**, bē-lēn', Bohemia, town and health resort seven miles south-southwest of Teplitz. It contains a fine old castle built in 1680, and one of more modern date; several churches, chapels, mills, etc. Within one mile of the town are much-frequented mineral springs, from which much water is exported. The salts and magnesia obtained from the water form important articles of commerce. It is an alkaline water, and is used with advantage in certain concretionary disorders. Here is also the singular basaltic rock called Biliner Stein. Pop. about 7,800.

**BILIOUS FEVER**, an old name given to a variety of conditions, but in all of which there was characteristic low-grade fever associated with a certain amount of jaundice, clayey stools, headache, foul tongue, etc. It probably represents no one disease, but a complication of many diseases. See BILIOUSNESS; FEVER; GASTRITIS; INFLUENZA; MALARIA.

**BILIOUSNESS**, a popular term to express some affection of the liver, but in all probability it is frequently a condition of disturbed gastric and duodenal digestion, and having nothing whatever to do with the liver. In the article on bile (q.v.) the passage of this liver secretion into the hepatic duct and storage in the gall-bladder and subsequent emptying into the duodenum is described. When the stomach is inflamed, the inflammation usually extends a certain distance into the intestines and as a consequence the mucous membrane of the common ducts also becomes inflamed and swollen. This prevents the free passage of bile into the intestines and therefore its important function in digestion is stopped or diminished. This results in further indigestion, and causes constipation, and increased putrefaction of the intestinal contents results. Thus there is a chain of many links formed that results in headache, heaviness, bloating, constipation, foul tongue, foul breath, dark urine, and in severe cases mild jaundice. The entire series may have been set in motion by over-eating, or drinking alcoholic liquors, or deficient exercise, eating excessively of fatty (so-called rich) food, or other hygienic misbehavior. Any or all have started the mild inflammation of the stomach or intestines, and the biliary flow has been diminished. But diminished functional activity of the biliary and pancreatic secretion due to congestion of the liver and pancreas produces similar symptoms as well as sometimes nervous prostration or, if prolonged, interference with action of the heart and arteries. The treatment should take into consideration the cause, and if the condition is obstinate a physician should be consulted. Rest, careful dieting, plenty of water, some mild laxatives, heat over the pit of the stomach, and hot water enemas, will usually right the condition. The free washing of the bowels and the laxative will usually cure the symptoms of poisoning, headache, and heaviness. Dosing with patent pills and teas and even so-called "home remedies" are to be condemned. Violent cathartics irritate the stomach, intestines and even the liver. While they empty the bowels and thus get rid of the poisoning symptoms, they leave behind or increase the conditions which permit of further trouble. See AUTO-INTOXICATION; BILE; CONSTIPATION; DIGESTION; LIVER.

**BILL, BROWNBILL, GLAIVE, VOULGE, or GISARME**, all names for nearly the same instrument, which, with some slight modification, was the standing weapon of the English infantry at close quarters, as was the long-bow their weapon at distant range, from the days of the battle of Hastings, at which the Saxons used the bill and the Normans the bow, until those of Queen Elizabeth. The original brownbill was a ponderous cutting weapon with two edges, that forward of the shaft having a concave or sickle blade, that to the back, a sort of angular cutting face, the upper part projecting before the base, so as to give a drawing blow. This terrible instrument was nearly three feet long, and 10 or 12 pounds in weight, set erect on a shaft of three or four

feet. It was wielded with both hands, and could sever a horse's head or a man's thigh or shoulder, through the strongest mail or plate armor, as a modern woodman's bill-hook slices off a hazel sapling. The weapon was afterward lengthened and lightened, and provided with a spear head, so that the holder could charge it like a lance, and sometimes with a cutting hook, for severing bridles or pulling men out of their saddles.

Also a cutting instrument, hook-shaped toward the point, or with a concave cutting edge; used by plumbers, basket-makers, gardeners, etc.; made in various forms and fitted with a handle. Such instruments, when used by gardeners for pruning hedges, trees, etc., are called hedge-bills or bill-hooks.

**BILL**, a paper, written or printed, giving a statement of the particulars of an account or action. A printed proclamation, an advertisement, an act of Congress or Parliament, or a tradesman's account is a bill.

**In Legislation.**— A term used to signify a special act passed by the legislature in the exercise of a *quasi*-judicial power. Thus, bills of attainder, bills of pains and penalties are spoken of. The draft of a law submitted to the consideration of a legislative body for its adoption or rejection. The Constitution of the United States provides that all bills for raising revenue must originate in the House of Representatives, but the Senate may propose or concur with amendments as on other bills. Every bill before it becomes a law must be approved by the President of the United States, or within 10 days returned, with his objections, to the House in which it originated. Two-thirds of each House may then enact it into a law. These provisions are copied in the Constitutions of a majority of the States.

**Bill of Adventure.**— A writing signed by a merchant, in which he states that certain goods shipped in his name really belong to another person, at whose risk the adventure is made.

**Bill of Attainder.**—A bill declaring that the person named in it is attainted and his property confiscated. The Constitution of the United States declares that no State shall pass any bill of attainder. During the Revolutionary War, bills of attainder and *ex post facto* acts of confiscation were passed to a wide extent. The evils resulting from them, in times of cooler reflection, were discovered to have far outweighed any imaginary good.

**Bill of Costs.**—A statement of the items which form the total amount of the costs of a suit or action. This is demandable as a matter of right before the payment of the costs.

**Bill of Credit.**—A letter sent by an agent or other person to a merchant, desiring him to give the bearer credit for goods or money. It is frequently given to one about to travel and empowers him to take up money from the foreign correspondents of the person from whom the bill or letter of credit was received.

**Bill of Entry.**—A written account of goods entered at the custom-house, whether imported or designed for exportation.

**Bill of Exceptions.**—A bill of the nature of an appeal from a judge who is held to have misstated the law, whether by ignorance, by inadvertence or by design. This the judge is bound to seal if he be requested by the counsel on either side so to do. The exceptions noted are reviewed by the court to which appeal is taken, and if the objections made to the rulings of the trial judge are well founded, the finding in the case is reversed, and usually the cause is remanded for a new trial.

**Bill of Exchange.**—A bill or security originally introduced for enabling a merchant in one country to remit money to a correspondent in the other. It is an open letter of request from one man to another, desiring him to pay to a third party a specified sum and put it to the account of the first.

**Bill of Health.**—A certificate given to the master of a ship clearing out of a port in which contagious disease is epidemic, or is suspected to be so, certifying to the state of health of the crew and passengers on board.

**Bill of Indictment.**—A written accusation made against one or more persons having committed a specified crime or misdemeanor. It is preferred to and presented on oath by a grand jury. If the grand jury find the allegations unproved, they ignore the bill, giving as their verdict, "Not a true bill"; if, on the contrary, they consider the indictment proved, their verdict is a "True bill."

**Bill of Lading.**—A document by which the master of a ship acknowledges to have received on board his vessel, in good order and condition (or the reverse), certain specified goods consigned to him by some particular shipper, and binds himself to deliver them in similar condition,— unless the dangers of the sea, fire or enemies prevent him,— to the assignees of the shipper at the point of destination, on their paying him the stipulated freight.

The bill of lading should contain the name of the shipper or consignor; the name of the consignee; the name of the vessel and her master; the places of shipment and destination; the price of the freight, and in the margin, the marks and numbers of the things shipped. It is usually made in three or more original parts, one of which is sent to the consignee with the goods, one or more others are sent to him by different conveyances, one is retained by the merchant or shipper, and one should be retained by the master. It is assignable by endorsement, and the assignee is entitled to the goods, subject to the shipper's right of stoppage *in transitu* in some cases, and to various liens. It is considered to partake of the character of a written contract, and also that of a receipt. In so far as it admits the character, quality or condition of the goods at the time they were received by the carrier, it is a mere receipt, and the carrier may explain or contradict it by parol; but as respects the contract to carry and deliver, it is a contract, and must be construed according to its terms. 3 N. Y. 322; 6 Mass. 422. Under the Admiralty Law of the United States, contracts of affreightment entered into with the master in good faith and within the apparent scope of his authority as master bind the vessel to the merchandise for the performance of such contracts in respect to the property shipped on board, irrespective of the ownership of the vessel, and whether the master be the agent of the general or special owner; but bills of lading for property not shipped, and designed to be instruments of fraud, create no lien on the interest of the gen-

eral owner, although the special owner was the perpetrator of the fraud. Under a bill of lading in the ordinary form, having no stipulation that the goods shipped are to be carried on deck, there is a contract implied that the goods shall be carried under the deck, and parol evidence to the contrary will not be received. 14 Wend. 26. But evidence of a well-known and long-established usage is admissible, and will justify the carriage of goods in that manner.

**Bill of Rights.**—A bill which gave legal validity to the claim of rights, that is, the declaration presented by the Lords and Commons to the Prince and Princess of Orange on 13 Feb. 1688, and afterward enacted in Parliament when they became king and queen. It declared it illegal, without the sanction of Parliament, to suspend or dispense with laws, to erect commission courts, to levy money for the use of the Crown on pretense of prerogative, and to raise and maintain a standing army in the time of peace. It also declared that subjects have a right to petition the king, and, if Protestants, to carry arms for defense; also that members of Parliament ought to be freely elected and that their proceedings ought not to be impeached or questioned in any place out of Parliament. It further enacted that excessive bail ought not to be required, or excessive fines imposed, or unusual punishment inflicted; that juries should be chosen without partiality; that all grants and promises of fines or forfeitures before conviction are illegal; and, that, for redress of grievances and preserving of the laws, Parliament ought to be held frequently. Finally it provided for the settlement of the Crown. In the United States, a bill of rights, or, as it is more commonly termed in this country, a declaration of rights, is prefixed to the Constitutions of most of the States. See UNITED STATES — STATE CONSTITUTIONS OF THE.

**Bill of Sale.**—A deed of writing, under seal, designed to furnish evidence of the sale of personal property. It is necessary to have such an instrument when the sale of property is not to be immediately followed by its transference to the purchaser. It is used in the transfer of property in ships, in that of stock in trade, or the goodwill of a business. It is employed also in the sale of furniture, the removal of which from the house would call attention to the embarrassed circumstances of its owner; hence the statistics of the Bills of Sale Act as an index to measure the amount of secret distress existing in times of commercial depression. In not a few cases bills of sale are used to defeat just claims against the nominal or real vendor of the goods transferred.

**Bill of Sight.**—A form of entry at the custom-house by which one can land for inspection, in presence of the officers, such goods as he has not had the opportunity of previously examining, and which, consequently, he cannot accurately describe.

**BILLAUD-VARENNE,** bē-yō-vä-rĕn, **Jacques-Nicolas,** French revolutionist: b. Rochelle, 23 April 1756; d. Port-au-Prince, Haiti, 3 June 1819. He was bred to the legal profession, and having come in 1785 to Paris, political events soon began to occupy his attention, and in 1789 three treatises appeared from his pen, entitled respectively 'Despotisme des ministres de France'; 'Dernier coup porté aux préjugés et à la superstition'; and 'Le Peintre politique.' Another publication, 'Acéphalocratie,' which appeared in 1791, subjected him to a judicial prosecution, and he was obliged to conceal himself for a time. He emerged from his retreat on the triumph of his party in September 1791, and in 1792 was elected a member of the National Convention. On the trial of the King he voted for execution within 24 hours. He contributed to the overthrow of the Girondists, and was subsequently chosen president of the convention, and member of the Committee of Public Safety, and in that capacity framed the Bulletin des Lois and assisted in organizing the revolutionary government. In 1795, on a reaction having taken place against the ultra party, he was arrested, and along with Collot d'Herbois, banished to Cayenne. On the overthrow of the Directorate he refused the amnesty offered by Bonaparte. In 1816, he visited New York but was coldly received and in the same year, on the restoration of Cayenne to France, he was obliged to take refuge at Port-au-Prince, in the island of San Domingo. Here he died in poverty.

**BILLAUT,** bē-yō, **Adam,** or **Maître Adam,** French poet: b. Nevers, 31 Jan. 1602; d. there, 19 May 1662. A carpenter by trade, he wrote rude but original poems, the gaiety of which, together with the contrast they afforded with his occupation, made them very popular at the time. He was a protégé of the Duke of Nevers and visited Paris in 1637, where he was fêted by the grand monde. He received a pension from Richelieu. Displeased with Parisian life he returned to Nevers, where he followed his trade and continued to write verses. Voltaire called him "Virgil with the Plane." The three collections of his poems were entitled 'The Pegs'; 'The Centre-Bit'; and 'The Plane.' His 'Œuvres choisies' were published at Paris (1806) and his 'Poésies' (Nevers 1842). Consult Laporte, 'Histoire littéraire' (Paris 1884).

**BILLBERGIA,** a genus of about 40 species of evergreen epiphytes of the family *Bromeliaceæ,* natives of tropical America and often cultivated in greenhouses for their showy flowers.

**BILLE,** bē'le, **Steen Andersen,** Danish naval officer: b. Copenhagen, 5 Dec. 1797; d. Copenhagen, 7 May 1883. He served in the French navy from 1820 to 1825 and took part in the expedition to Spain. For five years he was professor of French at the naval school, Copenhagen. He was a member of the expedition that went to South America in 1840, and had command of a scientific expedition round the world in the corvette *Galatea,* 1845–47. In his 'Beretning om Corvetten Galatheas Reise Omkrung Jorden, 1845–46 og 47' (1849–51) he has given an account of this expedition. In 1852–54 he was Minister of Marine and again in 1860–63. In 1864 he was made vice-admiral and retired in 1868. He was sent to conclude a treaty with China and has left a description of the voyage in 'Min Reise til China' (Copenhagen 1865). Consult Bille, Martha, 'Steen Andersen Bille' (Copenhagen 1885).

**BILLET,** bē-lā', **Félix,** French physicist: b. Fismes, Marne, 1808; d. 26 Jan. 1882. From 1845 he was professor of physics at the Univer-

sity of Dijon; in 1873 he became dean of the faculty. The apparatus known as the «Bilentilles de Billet» was named from him. He has written numerous important works, among which are 'Sur les changements de volume des corps par le passage de l'état solide à l'état liquide' (1845); 'Condensations électriques de deuxième et de troisème espèce' (1851); 'Traitè d'optique physique' (2 vols., 1859); Mémoire sur les demi-lentilles d'interférences' (1862).

**BILLET**, the term given to a molding frequently introduced in mediæval architecture, consisting of a torus ornamented by alternate checkers, like a staff cut into short lengths and disposed horizontally or around a molding, and of another molding, composed of a series of small projections, arranged around a curve in alternate directions, but in a consecutive manner.

**BILLETING OF SOLDIERS**, the compulsory lodging of soldiers with the inhabitants of a town, formerly a frequent practice whenever there was a deficiency of accommodation in barracks or regular quarters. The billeting of soldiers on private householders is now abandoned generally, and billeting is reduced as much as possible by camping out and other arrangements. In the United States the practice is regulated by the third constitutional amendment. In England it is confined to troops on the march and individual soldiers on special duty. Innkeepers or others, on whom troops are billeted, are paid according to a scale fixed by the government.

**BILLFISH**, any of several fishes having notably long, beak-like snouts, as a gar, needlefish, or spear-fish (qq.v.).

**BILLIARDS**, the generic name of a group of games; is played in the United States usually on a 5x10 table, fitted on each side and at the ends with rubber acting as cushions. Ivory balls driven by a wooden cue and varying in size from 2 5-16 inches to 2 7-16 inches are generally used. The bed of the table is slate, from 1¼ to 1¾ of an inch in thickness, and covered, as is also the rubber, with green cloth. The body of the table and legs, and the rails, are made from various designs of wood.

The origin of the game of billiards is shrouded in mystery, but is known to have been played in a crude way since before the birth of Christ. It is mentioned in Shakespeare's 'Antony and Cleopatra' (1607), and it is now generally agreed that the immortal bard, in his researches for facts, had read of billiards before the birth of our Saviour. Cathire More, a sub-king of Ireland, as early as 148 A.D., speaks of billiards and billiard balls of brass. In the 'Confessions' of Saint Augustine (b. 430 A.D.) mention is made of the game of billiards. From this time until the end of the 14th century very little is known of the game. It is mentioned in Spencer's 'Mother Hubbard Tales' (1591). About this time the French made it an indoor table game by playing it on a square table with pockets at each corner, and one in the centre of each side, a little cone in the centre of the table called the «king,» and an arch of ivory, known as the «port.» Certain scores depended on passing the «port» and touching the «king.» As early as 1734, as stated in Seymour's 'Court Gamester' these features of the game had disappeared, and cues had begun to replace the «mast» or «mace» first used. Billiards came into fashion in the time of Louis XIV, whose physicians recommended him this kind of exercise after eating. Some profess to believe the game of English origin as the earliest and fullest description of billiards is found in Cotton's 'Complete Gamester' (1674). The bed of the table was then made of oak, sometimes marble. Slate beds were first used about 1827. The pockets of the tables at that time, called «hazards,» were at first made of wooden boxes, nets being employed soon afterward.

The billiard table is said to have found its way into America through the Spaniards about 1570. At this time it was played in England, France, Germany and other countries, but the size of the table and style of the game differed. The English style of table and game was first adopted by the Americans. Six by twelve, six-pocket tables and four balls (two reds and two whites) were used. Soon the tables were reduced in size from 6x12 to 5½x11, then to about 5 feet wide by 10 feet long. Tables vary in measurements. All match and tournament games are now played on 5x10 tables, and are very popular in all leading public rooms and clubs throughout the United States, while the so-called 4½x9 tables are almost exclusively used in private residences and in small cities and towns.

It is only in the last 50 years that billiard tables and their paraphernalia, and billiard playing itself, have made giant strides. Until the year 1855, when Michael Phelan, the father of billiards, first introduced the celebrated combination cushions, made of rubber chiefly, the tools were necessarily crude and imperfect, and greatly retarded the progress of the players up to that period. Then was played the four-ball game on a 6x12, six-pocket table. Two red balls and two white balls were used. In the 'sixties the tables were reduced in size to 5½x11, but so fast did the professionals and amateurs improve their games under the improved condition of the table and tools, and in order to avoid the seeming monotony of long runs, it was found necessary to again reduce the size of the table, from pockets to carrom, to about 5 feet wide and 10 feet long, and change the style of game from four-ball to three-ball game. This was done early in the 'seventies. Experts soon became so proficient at this style of game as to render it necessary to place restrictions on the bed of the table by drawing lines first 8 inches, then 10, 12, 14, and finally 18 inches from the edge of the cushions the entire length and width of the table — called balk-line game. This method of restricting the professionals and leading amateurs in no wise does away with the beauties of the game, at the Massè, draw, follow, and combination cushion shots are left intact. The superb play of the professionals in this country and in France, where the same style of game is played, is due in a great measure to the improved construction of the beveled table, slabs, match rubber cushions, and to the ivory balls, cue, cue tips and chalk.

Various are the styles of billiards played now, such as «three-cushion carroms,» «cushion carroms,» «champions' game,» «balk-line game,» and the regular three-ball game.

Pool may be said to be, broadly speaking,

a branch of billiards, and is very popular with the masses. It lacks the skill and variety of billiards. Pool is played on a 5x10 or a 4½x9, six-pocket table, and generally with gully attachments — a new device that rather adds to the popularity of the game. This gully is so placed under the table that all the balls, when pocketed, will drop into a basket at the foot of the table. The most popular of the various pool games is "continuous pool," played with 15 numbered balls and one plain white one — the cue ball. These 15 balls are arranged in a triangle form at the foot of the table. The player's object is to drive as many of the numbered balls successively into one or other of the pockets as he can, subject to certain rules and regulations. There are various other kinds of pool games — "American," "pyramid," "Chicago," "forty-one," and others. For a complete list of these various styles of games, also all styles of billiards, with the rules governing them, the reader is referred to the 'Handbook of Standard Rules of Billiards and Pool.' This handbook also gives valuable hints on the care of tables, balls, cues, etc.

One of the most important parts that go to make billiard playing complete is the cue and cue-tip. The size and weight of the cue is a matter of individual judgment, but nearly all professionals and the best amateurs prefer one that weighs from 19 to 22 ounces, with the tip of the cue about a half inch full in diameter. The cue-tip is one of the leading, if not the leading, factor in billiard playing. Many public and private games are lost because of the imperfect quality of the cue-tip, and many players are wont to ascribe their defeat or bad play to the tip itself. Much depends on the manner of tipping the cue. Cue-tips are made in France and are of comparatively recent origin. They consist of two qualities of leather united, the under leather being very hard and flat, while the upper or top leather is somewhat porous, spongy and springy. Selecting a good leather and the tipping of billiard cues is an art in itself, and has become so important an adjunct to the success of the business that the leading billiard halls in this country find it necessary to employ a man to exclusively attend to that branch of the trade. It is an art, for instance, to hammer a tip down to the requisite firmness before it is ready to be glued to the top of the cue, over which the tip generally projects (if a new one), on all sides. Inside of an hour's time in dry weather, if the quality of the glue is good, the tip may be finished off ready for use. Turn the cue bottom side up, firmly press the leather onto a table, then using a sharp knife, cut the leather even with the top of the cue itself, and pare the upper leather as one would an apple, finish with sandpaper, size about 1½, and smooth off with single O sandpaper. A cue-tip, when ready for playing, should be about half-moon shape, but many and various are the shapes of tips. Never use sandpaper on a cue-tip after it has been played with for a while. If the tip becomes hard and greasy from frequent use of chalk, roll it lightly with a French file.

Billiards is without doubt far superior in point of skill and science to any game played, either indoors or outdoors. Chess and checkers are purely mental and yield no exercise to the body. Golf and other out-of-door games are dependent chiefly on execution, whereas billiard playing requires and combines both knowledge and execution. As a health-giving exercise and recreation, restful to the mind, physicians are now agreed that billiards leads all other games, while divines, politicians, artists, men of letters and women recommend it and play it at home, in the clubs and public rooms. It is steadily gaining in popularity among merchants, bankers and brokers as a relief to the turmoil of a busy life. No residence is thought complete without a billiard table.

**Bibliography.**— Thatcher, 'Championship Billiards, Old and New' (1898); Daly and Harris, 'Daly's Billiard Book' (1913), and for the English game, Ritchie, 'Useful Strokes for Billiard Players' (1910).

GEORGE F. SLOSSON,
*American Billiard Expert.*

**BILLINGS, Frank,** American physician: b. Highland, Wis., 2 April 1854. He was graduated M.D. at Northwestern University Medical School 1881; honorary S.M. ibid. 1891; was interne at Cook County Hospital 1881–82; and studied in Vienna 1885–86; was appointed professor of medicine at Northwestern University Medical School 1891; professor of medicine and dean of faculty of Rush Medical College 1898; professor of medicine University of Chicago 1905; president American Medical Association 1902–04; president American Association of Physicians 1907; president National Association for the Study and Prevention of Tuberculosis 1908; Shattuck lecturer, Boston 1902; Doctor of Science, Harvard University 1915; Lane Medical Lecturer, San Francisco 1915. He became editor of the 'Year Book of General Medicine' in 1901.

**BILLINGS, John Shaw,** American surgeon and librarian: b. Switzerland County, Ind., 12 April 1839; d. 1913. He was graduated at Miami University in 1857, and at the Ohio Medical College, 1860; was demonstrator of anatomy in the last institution, 1860–61; entered the Union army as an assistant surgeon, 1861; was promoted to lieutenant-colonel and deputy surgeon-general, 6 June 1894; and was retired, 1 Oct. 1895. Dr. Billings became curator of the Army Medical Museum and Library and made the latter the third and one of the most valuable medical libraries in the world. The 'Index Catalogue' of the library in 16 quarto volumes, which he prepared, is among the foremost of its kind. He was professor of hygiene in the University of Pennsylvania, 1893–96; and in the last year was appointed director of the New York Public Library (Astor, Lenox and Tilden Foundations). After the close of the war Dr. Billings reorganized the United States Marine Hospital Service; was vice-president of the National Board of Health, 1879–82; and had charge of the compilation of vital and social statistics in the 11th Census. He was a member of a large number of American and foreign scientific societies, and his numerous publications include 'Principles of Ventilation and Heating' (1884); 'Index Catalogue of the Library of the Surgeon-General's Office, United States Army'; 'National Medical Dictionary' (2 vols., 1889); 'Description of the Johns Hop-

kins Hospital' (1890); 'Social Statistics of Cities' (6 vols., for the 11th Census); 'Some Library Problems of Tomorrow' (1902); 'Physiological Aspects of the Liquor Problem' (1903).

**BILLINGS, Josh.** See SHAW, HENRY W.

**BILLINGS, Robert William,** English architect and author: b. 1813; d. 1874. He was a pupil of John Britton, and illustrated such important works as 'The History and Description of Saint Paul's Cathedral' (1837); and 'The Churches of London' (1839); and made notable additions to the literature of architecture in 'Illustrations of Architecture and Antiquities of the County of Durham' (1846); and 'Baronial and Ecclesiastical Antiquities of Scotland' (4 vols., 1845–52). He was employed in the restoration of many important old buildings in Scotland and England, including the chapel of Edinburgh Castle, Douglas Room, Stirling Castle, Gosford House, and Crosby-upon-Eden Church, Cumberland.

**BILLINGS, William,** American composer: b. Boston, 7 Oct. 1746; d. there, 26 Sept. 1800. He published no less than six collections of tunes, which, with a few exceptions, were of his own composition. They were founded upon the new style of church music, then first introduced by English composers, and their contrast to the dismal old tunes previously in use naturally gave them immense popularity. Yet they were far from being perfect in the requisites of good melody and harmony, and their author, in a quaintly worded preface to his second work, entitled 'The Singing Master's Assistant' and commonly known as 'Billings' Best,' apologizes for the errors which his first collection contains. Billings was a firm patriot, and an intimate friend of Samuel Adams, who frequently sat with him at church in the singing-choir. Many of his tunes, composed during the war of independence, breathe the true spirit of patriotism, and were sung and played wherever New England troops were stationed. Billings may fairly claim the title of the first American composer, for before his time there is no record of any musical composition by a native of this country. He is also known as "the father of New England psalmody."

**BILLINGS,** Mont., city and county-seat of Yellowstone County, on the Yellowstone River and the Northern Pacific, the Great Northern and the Burlington and Missouri River railroads, 238 miles east of Helena. The city is a very important wool exporting market, being in the centre of an extensive sheep-raising region. Its industrial establishments include machine shops, a beet sugar factory, flour and lumber mills and extensive brick yards. Coal, marble and limestone are found in the neighborhood. Pop. (1910) 10,031.

**BILLINGSGATE,** the proper name (presumably, though not quite certainly, from a personal name *Billing*) of one of the gates of London and of the fish-market long established there, which became a free market in 1699, was extended in 1849, rebuilt in 1852, and finally exposed to the rivalry of another market built 1874–76. The word is also used to indicate foul, abusive language, such as is popularly supposed to be employed by fish-wives who are unable to come to an amicable understanding as to the proper price of the fish about which they are negotiating. Billingsgate is used as a synonym of coarse, vulgar abuse.

**BILLINGTON, Elizabeth,** English singer: b. London 1768; d. Venice 1818. Her father was a German oboe-player named WEICHSEL, her mother an English singer. She made her appearance as a singer at the age of 14, and at 16 married Mr. Billington, a double-bass player. She made her début as an operatic singer in Dublin, and afterward appeared at Covent Garden, where she secured an engagement for the remainder of the season of 1786 for $5,000, the manager giving her two benefits. She finished her musical education under Sacchini, and sang in Venice and Rome with great success. Bianchi composed the opera of 'Inez de Castro' expressly for her performance at Naples. After Billington's death, in 1799, she married a Frenchman named Felissent and returned to London in 1801, where she filled a six months' engagement for $20,000. She retired in 1811 and thereafter lived at her villa near Venice. Her domestic life was unhappy. Her voice was of wonderful compass and was enhanced by her great personal charms. Consult Ferris, G. F., 'Great Singers' (Vol. I, New York 1892).

**BILLION,** in Great Britain and Germany, the term used to denote a million millions. In France, America and elsewhere it denotes a thousand millions. A similar difference is found in the use of the terms trillion, quadrillion, etc.

**BILLITON, or BLITONG,** East Indies, an island belonging to Holland, lying between Banca and the southwest of Borneo, of an irregular sub-quadrangular form, about 40 miles across; area, 1,863 square miles. There are large deposits of tin and other minerals. It is divided administratively into five districts, under the governor-general of the east coast of Sumatra. There are many Chinese among the population but few Europeans. Coral reefs surround the island. Padang is the capital. Pop. (1912) 58,480.

**BILLON,** an alloy of copper and silver, in which the former predominates, formerly used in Austria and Germany for coins of low value, the object being to avoid the bulkiness of pure copper coin.

**BILLOT,** bē'lō', **Jean Baptiste,** French soldier: b. Chaumeil, Corrèze, 15 Aug. 1828; d. 31 May 1907. Graduating from Saint-Cyr Military Academy, he entered the army, becoming a colonel in 1870. He was with the French army of invasion in Mexico and later served in Algeria. On the outbreak of the Franco-Prussian War he was commanding general of the 2d Army Corps, on the Rhine, and was one of the defenders of Metz. Later, while commanding the 18th Army Corps, he participated in the fighting at Baune la Rolande and Villersexel, where the French gained one of their few victories during the war. During all of 1882 and part of 1883 he was Minister of War in the Cabinet of Freycinet, and again under Meline from 1896 to 1898.

**BILLROTH**, bil'rōt, **Theodor**, German surgeon: b. Bergen, on the island of Rügen, 26 April 1829; d. 6 Feb. 1894. He was educated at Greifswald, Göttingen, Berlin and Vienna; was assistant to Langenbeck at Berlin and became professor of surgery at the University of Zürich in 1860, and at Vienna in 1867; in the war of 1870–71, he worked in German hospitals on the Rhine. He was one of the foremost surgeons of the day, not only as an operator, but as an authority on microscopic work, pathology and military surgery. He made many valuable contributions to medical literature, including 'Die allgemeine chirurgische Pathologie und Therapie,' translated into all European languages and into Japanese (1863; 16th ed., 1906); 'Chirurgische Briefe aus den Kriegslazaretten in Weissenburg und Mannheim' (1872); 'Ueber den Transport der im Felde Verwundeten und Kranken' (1874); 'Die Krankenpflege im Haus und im Hospital' (6th ed., 1899). Billroth was a good amateur musician and after his death appeared his 'Wer ist Musikalisch?' (3d ed., 1898).

**BILLS, Course of.** Public bills are those which affect the interests of the people at large and private bills are those which affect the interests of a person or persons whether they be private individuals or corporations (see BILLS, PRIVATE). The term "bill" is applied to a proposed law until it has passed through all its legislative stages and has been signed by the proper official, when it becomes an act or statute (see ACTS OF CONGRESS). In the United States, even after they have become law, some bills are popularly known by the name of the member or members of the legislative body introducing them, as the McKinley Bill, or the Gorman-Wilson Bill, though the words bill, act and law are used interchangeably in designating them. The British government provides that the preparation of all public bills must be supervised by an expert, the clerk of the House of Commons, and even private bills must pass his scrutiny before introduction. In the United States House of Representatives, however, since there is no check on the right of an individual member to introduce a bill on any conceivable subject upon any legislative day, and since the form and scope of the bill are determined by its introducer, there is much laxity and variation in the methods pursued in the preparation of bills.

In the House, private bills are left in the clerk's box while public bills are left on the speaker's table; in the Senate, after a member is recognized he asks permission to introduce a bill, but unless the other members give unanimous consent (which, however, is seldom refused) he must wait the customary period of one day. After bills have been introduced they are referred to the committees having jurisdiction, and are then printed; when the committee reports they are placed upon the calendar in the order in which they are reported. The Senate has a single calendar and consideration is given to bills in order, but the House has three calendars: the private calendar, the Union calendar for money bills, and the House calendar for other public bills. Hence consideration is not given to bills in the order in which they are reported but they are brought up either at the instance of the committee reporting them, or by unanimous consent, or by suspending the rules, or by adopting a special rule reported by the committee on rules. While three readings of a bill are required and the rule is followed technically, the committee system has divested the rule of much of its significance. By unanimous consent the first and second readings in the Senate take place before a bill is referred to the proper committee, but in the House a bill is first read by title and then in full when taken up from the calendar for consideration. After finishing discussion of a bill on its second reading and disposing of suggested amendments, the final stage (if no objection be made) is entered upon, consisting of three operations, though only one vote is taken: the order for engrossment, the third reading and final passage. When reading for the third time it is customary to read by title only, though if a question be raised it must be of the entire engrossed bill; upon final passage the bill is engrossed, now by printing. After this has been done it is signed by the clerk or secretary and forwarded to the other house, in which it pursues the course of a bill originating therein. If it be passed by the second house without amendment, it is returned to the first house for enrolment on parchment, is next signed by the speaker of the House and the president of the Senate (upon report by the committee on enrolled bills that it has actually been enrolled) and then presented by this committee to the President for his signature or rejection by veto. But if the bill be amended by the second house it must again be considered by the first house, either to accept the amendments (in which case the bill is enrolled) or to reject them and request the other house to appoint a conference committee. In this case the other house either eliminates its amendments or insists and appoints such committee. After conferring, the committees report simultaneously to their respective houses and if the report be adopted by both the bill is enrolled as above. When bills have been signed by the President (but see VETO) they become Acts of Congress (q.v.) and are filed in the State Department; and the house in which the bill originated is notified of the signature which fact is recorded in its journal.

In the main the State legislatures follow the proceedings of Congress but there are many minor variations. Some State Constitutions provide that no bill shall receive consideration for passage unless previously referred to and reported by a committee. Several States prohibit the introduction of bills after a certain period of time has elapsed or within a certain number of days prior to the termination of the session; and two States forbid the passage of bills on the last day or two. The majority of the States require that a bill be read three times, usually in full on separate days, though this requirement may be overruled by unanimous consent or a special message from the governor. If the legislature fail to conform to the rules strictly, there is no outside power that can compel such observance. Consult Cushing, L. S., 'Law and Practice of Legislative Assemblies' (1907); Hinds, A. C., 'Rules of the House of Representatives' (1909); Reinsch, P. S., 'American Legislatures and Legislative Methods' (1907).

**BILLS, Private.** A private bill is distinguished from a public bill in that it affects only a particular person or place, whereas the latter affects all persons in the State generally or all persons in a class. Private bills are usually designed to benefit some particular person, corporation or place, and the proceedings with reference to them are not only legislative but to a certain extent judicial. Among private bills are those to incorporate gas, water, railway and other companies; to incorporate cities or towns or to increase their powers; to naturalize particular individuals or to change their names; to grant pensions to particular persons; to settle private claims; divorce bills; etc. A private bill must not be confused with a private member's bill in the British Parliament, the latter being a bill which is introduced by a private member of Parliament as distinguished from a member of the government. In England private bills are initiated by "petition" and may be introduced only if they have been advertised publicly for three months prior to the assembling of Parliament. Being regarded as a privilege, fees are required to be paid by the promoters of such bills at the various stages of their passage. They are required to be deposited before 31 December in the "private bill office" where they may be subjected to public inspection and the inspection of two examiners appointed to ascertain if they have followed the prescribed preliminaries. A committee on private bills then listens to arguments on their merits and reports to the House, where they are either passed or rejected. See GREAT BRITAIN — PARLIAMENT.

In the United States House of Representatives there is a separate private bill calendar but the legislative stages through which private and public bills must pass do not differ in any essential particular. However, the House of Representatives does set aside Friday of each week for the consideration of private bills, such as pension bills, relief measures, claims against the government, etc., though by a majority vote this day may be devoted to other business. Some States observe the English distinction between public and private bills, using a different procedure in their passage. Pennsylvania and some other States require at least 30 days' notice of the intention to introduce such a bill, which notice must be published in the locality in which the thing to be affected is situated. Massachusetts requires a petition and notice by advertisement or otherwise to all parties affected or interested before a private local bill can be introduced and considered. Consult Bryce, James, 'The American Commonwealth' (4th ed., 1910); Clifford, W. K., 'History of Private Bill Legislation' (1885); Cushing, L. S., 'Law and Practice of Legislative Assemblies' (1907); Hinds, A. C., 'Precedents of the House of Representatives' (1907–08), and 'Rules of the House of Representatives' (1909); Ilbert, Sir C., 'The Mechanics of Law Making' (1914); Reinsch, P. S., 'American Legislatures and Legislative Methods' (1907).

**BILLY-BOY,** a flat-bottomed, bluff-bowed vessel rigged as a sloop, with a mast that can be lowered so as to admit of passing under bridges. They generally belong to the Humber ports.

**BILNEY, Thomas,** "LITTLE BILNEY," English martyr: b. probably at Norwich, about 1495; d. Norwich, 19 Aug. 1531. He studied at Trinity Hall, Cambridge, and was ordained in 1519. He was opposed to the formal "good works" of the Schoolmen and denounced saint- and relic-worship; and to these plain Protestant views he converted Hugh Latimer and other young Cambridge men. In 1527 he was arraigned before Wolsey and, on recanting, absolved, but was confined in the Tower for over a year. Stung by remorse, after two years of suffering, he began to preach in the fields of Norfolk, but was soon apprehended and condemned; and although reconciled once more to the Church, he had to suffer the penalty of a relapsed heretic and was burned to death.

**BILOXI,** bĭl-oks'ĭ, Miss., a city in Harrison County, on Biloxi Bay, opening into the Gulf of Mexico, and the Louisville & Nashville Railroad, 80 miles northeast of New Orleans. It is principally engaged in the canning of oysters, fish, fruit and vegetables and has also considerable manufacturing and shipping interests. The waterworks are the property of the municipality. Biloxi is near the site of the first settlement made upon the Mississippi by white men, under the direction of Pierre Le Moyne d'Iberville, in 1699. In 1701 this settlement (now Old Biloxi) was abandoned after a destructive fire and in 1712 a permanent settlement was made on the present site across the river from the old. It was long the capital of the French territory in that part of America, was incorporated in 1872 and chartered as a city in 1896. It is governed by a mayor and council. The modern town is a popular resort, has a fine beach, paved streets and beautiful surroundings. Consult French, 'Historical Collections of Louisiana' (New York 1846–50). Pop. 8,049.

**BILOXI INDIANS,** one of the groups of tribes into which the Siouan stock of North American Indians is divided. In 1669 they had one village on Biloxi Bay near the Gulf of Mexico. Thirty years later there were three villages, Biloxi, Paskagula and Moctobi. Probably early in the 18th century they removed to Louisiana. It was long assumed that they were related to the Choctaws but Gatschet's researches have shown that their language is a dialect of the Siouan stock. He discovered a few survivors of the group near Lecompte, Rapides Parish, La., who still spoke their language. Consult Darsey and Swanton, 'Dictionary of the Biloxi Language' (Washington 1912), and Swanton, J. R., 'Bulletin 43, Bureau of American Ethnology.'

**BILSON, Thomas,** English divine: b. Winchester 1547; d. 18 June 1616. He was educated at Winchester School, and after completing his studies at New College, Oxford, became sucessivly warden of the school and prebendary of the cathedral of Winchester. In 1585 he published a work, entitled 'The True Difference Between Christian Submission and Anti-Christian Rebellion,' intended mainly to defend the government and policy of Elizabeth; it was swiftly perceived by Nonconformists that Bilson "gave strange liberty in many cases, for subjects to cast off their obedience." Histori-

cally, this work, while accomplishing its object in Elizabeth's day, contributed to the ruin and death of Charles I. In 1593 another work, entitled 'The Perpetual Government of Christ's Church,' is still considered one of the ablest defenses of episcopacy. In 1596 he was made bishop of Worcester, and was transferred in the following year to Winchester. In 1603 Bilson preached the coronation sermon before James I, and in 1604 he took a prominent part in the celebrated conference at Hampton Court. The translation of the Bible, executed during the reign of James, was partly submitted to his revision. He was buried in Westminster Abbey.

**BILSTED.** See LIQUIDAMBAR.

**BILSTON**, England, town in Staffordshire, three miles southeast from Wolverhampton. It is a part of the parliamentary borough of Wolverhampton. It has extensive coal and iron mines; the other chief industries consist of iron smelting works, foundries, manufactories of tin-plate goods, enameled wares, nails, wire and pottery. The waterworks are municipal property. Nearby is found a fine grade of sand much used for metal casting. Pop. 25,681.

**BIMETALLISM.** A monetary system wherein gold and silver are both used as standard money and coined without limit at a fixed ratio imposed by legislation. Bimetallism proper implies, first, that the money unit shall be represented in two metals; second, that these metals shall enjoy equal and unlimited coinage privileges; third, that they shall be equalized by law in a fixed and definite ratio; and fourth, that the coins made from either of them shall be a full legal tender.

The term «limping bimetallism» has been applied to systems wherein gold and silver were both recognized as standard money, but in which one of the metals was not coined at all, or not coined on equal terms with the other. The term «free coinage» has sometimes been used to mean unlimited coinage and sometimes to mean gratuitous coinage. Unlimited coinage is necessary to a complete bimetallic system. When coinage is limited the volume of standard money is to that extent regulated by law; when coinage is unlimited the volume depends, first, upon the total accumulation of coin, and, second, upon the annual production of the money metals. This sum is further augmented by the coinage of gold and silver plate when money becomes scarce, or lessened by an increased demand for gold and silver in the arts when money becomes plentiful.

Bimetallism does not rest upon any natural particular ratio; the coinage ratio is arbitrarily fixed by law, and can be changed by law. The ratio states the proportion existing between the silver dollar and the gold dollar when measured by weight — that is, at the ratio of 16 to 1, the silver dollar weighs 16 times as much as the gold dollar. While the legal and commercial ratios between the metals have fluctuated from time to time the commercial ratio has, as a rule, followed the legal ratio, and from the beginning of history down to 1873 the fluctuations in the commercial ratio were never as sudden or as great as they have been since 1873. During the 400 years which elapsed between 1473 and 1873 the extreme variation in the commercial ratio was from 14 to 1 to 16 to 1, although during that period there were greater changes in the relative production of the metals than have occurred since. For instance, between 1800 and 1840 the world's production of silver was about 4 to 1 in value, compared with the production of gold; after the new discoveries of gold in 1849 the production of that metal so increased that the annual output of gold was soon more than 3 to 1 in value, compared with the output of silver, and yet during this tremendous change in relative production the commercial ratio was comparatively stable, owing to the fact that all the gold and all the silver could go through the mints into the world's currency.

The ratio of 16 to 1 was advocated by American bimetallists, first, because it was the ratio existing between the silver and gold coins in circulation in the United States; and, second, because an increase in the ratio, made by increasing the size of the silver dollar, would to the extent that it was joined in by other nations require the recoinage of silver coins into larger coins, and thus reduce the world's volume of standard money. If, for instance, the ratio were changed to 32 to 1 by international agreement, and the silver money of the world, approximating $4,000,000,000, were recoined into $2,000,000,000, it would cause a shrinkage of about 25 per cent in the total volume of metallic money and, as contracts would still call for the same number of dollars, such a change in the ratio would transfer billions of dollars in value from the wealth producers to the holders of fixed investments.

Bimetallism, therefore, relates to the legal status of the metals rather than to their commercial value, and does not necessarily imply the simultaneous or concurrent circulation of both metals.

The Gresham law has often been quoted against bimetallism. That law is a statement, made by a master of the English mint of that name, who announced as his observation that the worn, light-weight coins ran the full-weight coins out of the country — the explanation being that while, to a majority of the people, one coin was as good as another so long as it would pass current, the jewelers would melt and the dealers in money would collect and export the heaviest coins (coins passing by weight rather than by legal tender value outside of their own country). It can readily be seen that the Gresham law can apply not only to the use of two metals when there is difference between government ratios, but also when the commodity values of the two metals differ. When, for instance, we had a ratio of 15 to 1 in this country, and the French ratio was 15½ to 1, there was a tendency to send American gold to France and bring French silver to the United States, and yet this tendency did not cause the exportation of all American gold to France or of all French silver to the United States. France, being at that time the stronger nation commercially, fixed the ratio and our gold rose to a premium. In the payment of debts silver was the money employed, and gold, when it was used, was used at its commodity price, which was expressed as a «premium.» After 1834 the situation was reversed and silver went to a premium. Gold was then used for the payment of debts and for general transac-

tions, and silver, when it was used, brought a premium. When the ratio was 15 to 1 in this country gold went to a premium of about 3 per cent, because the French ratio was 15½ to 1: when our ratio was changed to 16 to 1 silver rose to a premium of about 3 per cent.

In bimetallism the debtor always has the option. This is true, not because of a desire on the part of the government to favor the debtor, but because the parity can be maintained in no other way. The desire of all debtors to secure that metal which is the cheaper will, in itself, by increasing the demand for the cheaper metal, tend to equalize the commercial value of the metals with the legal value.

Bimetallism has been declared to be theoretically better than monometallism (either of gold or silver), because under the double or bimetallic standard the volume of money changes less rapidly and less suddenly than under the single standard. As a rule the increase in the production of one metal has spread itself over the entire volume of money and has, therefore, caused a less proportionate increase than it would have caused had the world been using but one metal, either gold or silver, as standard money.

The practical argument advanced in favor of bimetallism is that neither metal alone furnishes a sufficient quantity of money to support the world's commerce. This phase of the question was not much considered until after 1873 because, prior to that date, there were sufficient mints open to the coinage of both metals to furnish a monetary use for every ounce produced. When all of the gold and silver available for coinage could go through the mints into the currency, each nation could consider the question from a purely theoretical standpoint, because so long as the commercial world had the benefit of the entire volume of gold and silver, it did not make so much difference how many nations used one metal, or the other, or both. When, however, the gold standard for money systems came into favor and enough nations joined in it to reduce the demand for silver below the supply available for coinage, then each nation was compelled to consider not only its preference as to a standard, but whether — and it was a vital question — it was always sure of having a sufficient quantity of the chosen metal.

The advocates of bimetallism contended not only that the law of supply and demand regulates the value of the dollar — an increase in the demand, the supply remaining the same, raising the purchasing power of the dollar, and an increase in the supply, the demand remaining the same, decreasing the purchasing power of the dollar, but they also asserted that supply and demand regulate the market price of the metals.

The contention of monometallists that it is impossible to fix a relation between two metals was met with the reply that the relation between two things of limited production, such as gold and silver, can be fixed by any nation or group of nations which can furnish a use for so much of both metals as is available for coinage.

The demand created by the government must be considered as added to the demand created by the arts. If the demand created by the government is sufficient to utilize the surplus over and above what the arts require, the commercial value can be kept up to the coinage value for the reason that each owner will seek the highest possible price, and so long as the government stands ready to convert a given amount of metal into a given amount of money, he will not have to dispose of the metal to any one else for less than the government price. If the government, instead of standing ready to convert one metal into money, stands ready to convert two metals into money, it can make the commercial ratio and the coinage ratio identical, if there is a use for the money. The changes in relative production would not affect this condition so long as the government was able to utilize all of the surplus of both metals.

Independent bimetallists and international bimetallists, though agreeing as to the theoretical and practical benefits of the double standard, differed as to the ability of the United States alone to maintain the parity, the former contending, and the latter denying, that under conditions as they then existed the nation was able to utilize all the silver that could come to our mint.

The fear that, under bimetallism, our country would be flooded with the coined silver of the world was declared to be without foundation, for the reason that our ratio, 16 to 1, was more favorable to gold than the ratio existing between gold and silver in the nations that have a large quantity of silver coin. France, for instance, was the largest European holder of silver, but as her silver circulates on a parity with gold at a ratio of 15½ to 1, it could only come here at a loss equivalent to about three cents on the dollar.

Whether the mines would furnish an excessive amount of silver was a question about which no one could speak positively, because no one can foresee new discoveries or estimate the possible exhaustion of mines.

Raising the government price of a precious metal does not necessarily increase the production of it, neither does the lowering of the price necessarily reduce the production. The use of gold and silver as money is the dominating factor in its value. If, by agreement among all the nations, the legal tender function was withdrawn from both gold and silver, and other money substituted for them, both would fall in value, as expressed in the new money, just how much no one knows, because a fall in the price of either of the metals would develop new uses and thus increase the demand, which, in its turn, would react with the supply in determining the ultimate price. The arguments pro and contra as to the desirability of bimetallism as a monetary system belong properly in the article MONEY.

The United States established the double standard in 1792. France followed in 1803. England adopted the gold standard in 1816 and since then has exerted a controlling influence on other European nations whose coinage, however, remained silver for many years. About 1850, France went over to the gold basis and in 1865 the Latin Union adopted the French standard. In 1867 the international money conference at Paris unanimously accepted the single standard for co-ordinating the currencies of the countries taking part in

that conference. In 1871, after the Franco-German War, Germany established the gold standard and demonetized silver. In 1873 the United States formally adopted the gold standard, but in 1878 initiated a monetary convention at Paris to discuss the question of a return to bimetallism. The proposition was rejected. Again, in 1881, with the co-operation of France, the United States invited the nations to another conference on bimetallism. England and Germany opposed the change and the movement failed. In 1892 the United States made another attempt at Brussels to discuss bimetallism, but without result. In 1893 India closed its mints to the free coinage of silver. The elections in 1900 in the United States finally disposed of the question of a double standard and bimetallism disappeared from political controversy.

**Bimetallism in the United States.**— The bimetallic standard was recommended by Jefferson and Hamilton and adopted by our government by a statute approved by Washington in 1792. This law provided for the free and unlimited coinage of silver and gold at the ratio of 15 to 1, the coins being equally a legal tender for all debts public and private. The Spanish milled dollar then in use in this country contained the same amount of pure silver as our present silver dollar and, the ratio of 15 to 1 having been adopted, the gold dollar was made to weigh one-fifteenth as much. The silver dollars then coined are sometimes called the "unit dollars," because they have on the edge the inscription: "Hundred Cents, One Dollar, or Unit."

In 1834 the ratio was changed from 15 to 1 to 15.988 + to 1, which for convenience has been called 16 to 1. The change was made for the purpose of checking the exportation of gold, but as the new ratio undervalued silver it made gold the money in general use. This law provided for the free and unlimited coinage of gold and silver into full legal tender money at the new ratio. In 1837 the alloy in the dollar, both gold and silver, was changed from one-twelfth to one-tenth, making the weight of the standard silver dollar 412½ grains, nine-tenths fine, and the weight of the standard gold dollar 25 8-10 grains, nine-tenths fine.

As the law of 1834 undervalued silver and led to the exportation of considerable quantities of it, it became difficult to keep fractional currency in circulation, and to remedy this the law of 1853 was enacted. By the terms of this law subsidiary silver (that is, coins of less denomination than $1), were reduced from full weight to light weight and made token money, with limited legal tender, instead of standard money. This law, however, did not change the provision in regard to the standard silver dollar, the free and unlimited coinage of that dollar still continuing. The subsidiary silver coins were redeemable in the standard money, either gold or silver. Sometimes the Act of 1834 has been referred to as establishing the gold standard, but this is erroneous. It merely changed the ratio and that, too, by reducing the weight of the dearer dollar, not by increasing that of the cheaper dollar. Equally erroneous is the assertion that the Act of 1853 established the gold standard. That did not in the least change the law relating to the standard money, either gold or silver.

On 12 July 1873 the demonetization of silver was effected by an act entitled "An Act Revising and Amending the Laws Relative to the Mints, Assay Offices and Coinage of the United States."

When this law was passed the business of the country was being transacted with paper money, both gold and silver being at a premium — silver at a greater premium than gold. In making provision for silver coinage it omitted the coinage of the standard silver dollar and substituted for it a trade dollar of 420 grains which was intended for use in the Orient, it being thought that the trade dollar would compete with the Mexican dollar in China and other Eastern countries. In 1874 the Federal statutes were revised and in this revision a clause was inserted limiting the legal tender of silver coins to amounts not exceeding $5.

The suspension of silver coinage by the United States alone would not have caused a fall in the price of silver as measured with gold, but other nations joining in the demonetization of silver it soon became apparent that the mints of the world still open could not utilize all the silver available for coinage, and the gold price of silver began to decline. An effort made to reopen the United States mints to silver resulted in the passage of what was known as the Bland-Allison Act. The bill, as it passed the House, under the leadership of Richard P. Bland, of Missouri, restored the free and unlimited coinage of gold and silver at the ratio of 16 to 1. The opposition in the Senate was sufficient, however, to defeat the bill in its original form, and to compel the acceptance of a substitute framed by Senator Allison, whose name was thus connected with the law. This compromise measure provided that there should be "coined at the several mints of the United States silver dollars of the weight of 412½ grains troy of standard silver as provided by the Act of January 1837," and also provided that such silver dollars "together with all silver dollars heretofore coined by the United States of like weight and fineness" should be "a legal tender at their face value for all debts and dues public and private, except where otherwise stipulated in the contract."

In order to secure the bullion out of which to coin the dollars mentioned in the Act of 1878, the law provided "that the Secretary of the Treasury is authorized and directed to purchase, from time to time, silver bullion, at the market price thereof, not less than $2,000,000 worth per month nor more than $4,000,000 worth, and cause the same to be coined monthly, as fast as so purchased, into such dollars."

The purchase of silver for coinage under this act retarded the fall in the price of silver, but as it did not consume the entire surplus it was not sufficient to restore the price of bullion to the coinage value of $1.29 an ounce.

The Bland-Allison Act remained on the statute books until 1890, when it was repealed by what was known as the Sherman Purchase Act, which provided for the purchase of 4,500,000 ounces of silver per month, or so much thereof as might be offered at a price not exceeding the coinage value, the bullion to be

paid for by the issue of treasury notes, redeemable in coin; and after 1 July 1891 only so much of the silver was to be coined as was necessary to redeem the treasury notes presented.

This act immediately increased the demand for silver and the price of silver bullion, not only in the United States, but all over the world, rose to about $1.21 an ounce. But when it was found that even this demand was not sufficient to utilize all the surplus silver, the price again began to fall.

The treasury notes issued in the purchase of silver were made a legal tender for the payment of all debts public and private, except where excluded by contract, and were redeemable by the Secretary of the Treasury "in gold or silver coin at his discretion." It will be seen that the option as to the coin of payment was reserved to the government, but another clause in the measure which declared it to be "the established policy of the United States to maintain the two metals on a parity with each other upon the present legal ratio or such ratio as may be provided by the law," was afterward construed by the Treasury Department to deprive the Secretary of the option.

This ruling of the Treasury Department was followed by the presentation of treasury notes and a demand for gold, and the drain upon gold which followed was used as an argument in favor of the repeal of the purchase clause of the law.

What has sometimes been called "the silver movement" began with the discovery of the effect of the law of 1873, and has continued with varying force ever since.

It might better be designated as the bimetallic movement, because it was an effort to restore bimetallism, and the supporters of the movement asked for silver nothing more than was already granted to gold.

During the period following 1873 three international conferences have been held with a view to the restoration of silver (at Paris in 1878 and in 1881, and at Brussels in 1892), but they have been unsuccessful, largely because other European countries have hesitated to act without England, and England, being largely a creditor nation, has been unwilling to surrender the advantage which a rising dollar has given her in the increased purchasing power of her credits.

In the summer of 1893, the President, giving as his reason the suspension of the coinage of silver in India, called Congress together in extraordinary session and recommended the unconditional repeal of the purchase clause of the Sherman Law. Congressman Wilson, chairman of the Committee of Ways and Means, and leader of the administration forces in the House, introduced a bill identical in purpose and almost repealing the purchase clause of the Sherman Law without substituting any provision for the further coinage of silver. After a prolonged contest this bill became a law in November 1893.

The campaign of 1896 resulted in the election of the Republican ticket by a large majority, and as that party had committed itself to international bimetallism, the verdict at the polls was considered a victory for the double standard rather than for the single gold standard.

In the pursuance of the promise contained in the Republican platform, President McKinley, immediately upon taking his seat, sent a commission to Europe to solicit co-operation in the restoration of silver to its former place by the side of gold, but this commission failed to secure any concessions from England and no formal conference was arranged. See DEMOCRATIC PARTY; REPUBLICAN PARTY.

**Bibliography.**—Andrew, 'An Honest Dollar' (1894); Barclay, 'The Silver Question and the Gold Question' (1890); Darwin, 'Bimetallism' (1887); Giffen, 'The Case Against Bimetallism' (1896); Laughlin, 'History of Bimetallism in the United States' (1897); Miller, 'Gold or Silver' (1896); Stokes, 'Bimetallism' (1895); Taussig, 'The Silver Situation in the United States' (1893); Walker, 'International Bimetallism' (1896). Also the reports of the three international monetary conferences in 1878, 1881 and 1892.

**BIN,** băn, **Emile Jean Baptiste Philippe,** French painter: b. Paris, 10 Feb. 1825; d. 1897. He was a pupil of Gosse and Cogniet. In 1878 he was made a member of the Legion of Honor, and in 1881 was conspicuous as one of the founders of the Society of French Artists. His 'Prometheus Chained' is in the Museum at Marseilles. Among his portraits are those of MM. Clemenceau and de Marcère.

**BINALONAN,** bē-nä-lō'nän, Philippines, a town of the province of Pangasinán, Luzon, situated in the western part of the island of Luzon, about 20 miles from the coast, at the junction of several highroads. Pop. 10,295.

**BINANG,** bē-näng, Philippines, a town of the province of Lagum, Luzon, situated on the Bay Luzon, about 15 miles south of Manila, on highroads connecting it with Cavite, Manila and other important towns. Pop. 19,786.

**BINARY LOGARITHMS,** a system of logarithms devised by Euler for facilitating musical calculations. Instead of having, like the common system of logarithms, 1 as the logarithm of 10, it had 1 as the logarithm of 2.

**BINARY NOTATION,** a method of notation invented by Leibnitz, but which appears to have been in use in China about 4,000 years ago. As the term binary implies, there are only two characters in this notation; these are 1 and 0. By it, our 1 is denoted by 1, 2 by 10, 3 by 11, 4 by 100, 5 by 101, 6 by 110, 7 by 111, 8 by 1000, 9 by 1001, 10 by 1010, etc. The principle is that the postposition of 0 multiplies by 2 in place of by 10, as in the common system. Some properties of numbers may be more simply presented on this plan than in the common one; but the number of places of figures required to express a sum of any magnitude is a fatal objection to its use. Indeed, Leibnitz himself did not recommend it for practical adoption.

**BINARY STAR.** See DOUBLE STARS.

**BINARY THEORY,** in chemistry, a hypothesis proposed by Davy to reduce the haloid salts (as NaCl) and the oxygen salts (as $Na NO_3$) to the same type, the monad Cl′ being replaced by the monad radical containing oxygen $(NO_3)'$. Acids are hydrogen salts, as HCl, or $H(NO_3)'$. A radical is only part of a molecule, which can unite with or replace an ele-

ment or another radical, valence for valence. Thus the dyad radical $(SO_4)''$ can replace two monad radicals, $(NO_3)'_2$, as in the equation $Pb''NO_3)_2 + Mg''(SO_4)'' = Pb''(SO_4)'' + Mg''(NO_3)'_2$. A radical cannot exist in a separate state.

**BINBIR-KILISSEH,** bēn'bēr-kē-lē-sā', some ruins of ancient tombs in the pashalic of Karamania, Asia Minor, 20 miles north-northwest of Karaman, supposed to occupy the site of Lystra, where the cripple was healed by Paul.

**BINCHOIS,** bē'shwā', **Gilles,** composer of Gallo-Belgic music: b. Bins, Hainaut, 1400; d. Lille 1460. He is supposed to have been a soldier during his earlier years, after which he became a choir singer in the chapel of Philip the Good of Burgundy. Recently some of the manuscripts of his masses have been found, containing some 50 songs in rondeau form with instrumental accompaniment, which have added considerably to a knowledge of the music of that period.

**BINDING, Karl,** German jurist, criminologist and historian: b. Frankfort-on-the-Main, 4 June 1841. He studied law at Göttingen and Heidelberg and in 1873 was appointed professor of criminal law at the University of Leipzig. During 1908–09 he was rector of that institution. Among his leading works are 'Der Entwurf eines Strafgesetzbuchs für den Norddeutschen Bund' (Leipzig 1870); 'Die Normen und ihre Uebertretung' (2 vols., Leipzig 1872–77); 'Die rechtliche stellung des Kaisers im heutigen deutschen Reiche' (1898); 'Grundriss des deutschen Strafprozessrechts' (1899, 5th ed., 1905); 'Lehrbuch des gemeinen deutschen Strafrechts' (3 vols., 1902–05).

**BINDWEED.** See CONVOLVULUS.

**BINET,** bē'-nā', **Alfred,** director of the laboratory of research at the Sorbonne, Paris: b. Nice, 4 July 1857; d. 1911. He went to Paris in 1871, where he made a study of medicine and law. For a time he was uncertain which career he should follow; but his deep interest in research work won the day for medicine. He became a frequent and noted contributor to the medical and other journals of Paris interested in the special line of work to which he had decided to devote himself. He attracted attention by a book on the psychology of thought as applied to hypnotism (1886). This was followed by 'Sub-conscious Thought' (1887); 'Studies in Psychology' (1888); 'Changes in Personality' (1892); 'Introduction to Experimental Psychology' (1894); 'Double Consciousness' (1896); 'Intellectual Weariness' (1898); 'Suggestibility' (1900); 'Thoughts upon Children' (1900); 'An Experimental Study of the Intelligence' (1903); 'Soul and Body' (1905); 'Revelations made by writing under Scientific Control' (1906); 'Abnormal Children' (1907). In several of these works Binet was aided by V. Henri, Courtier, Philippe, H. Beaunis, Th. Ribot and Simon, and in some of them one or other of these writers is acknowledged as joint author, in some others as helper or adviser. Beaunis and Ribot were joint editors with Th. Ribot of *L'année psychologique,* a yearly publication devoted, as its name implies, to the progress of psychology. In 1906 this journal confined its efforts to the study of practical and social questions along the lines of Binet's favorite studies. Previous to this, Binet had been making deep researches, together with Simon, into the working of the human intelligence. In 1905 the joint authors published the first series of the Binet-Simon tests, an attempt to find some exact standard by which to measure degrees of intelligence. This was followed by a second series along the same line in 1908. Binet and his co-workers taught, contrary to the German thinkers along the same lines, that the higher functions of mankind, such as intelligence, comprehension, imagination, sentiment and suggestion, varied more in the individual than other functions which had, until then, been depended upon for the judgment of mental capacity. So he and his fellow-workers set to work to invent and develop new tests such as would make it possible to make use of these higher functions in the tests for mentality. He and Simon constructed a series of graded tests based upon continuous experiments under different conditions and surroundings. By these tests it is possible to determine the degree of intelligence of a child and to classify his normality or abnormality with considerable exactness. These tests, as issued in 1908, are 56 in number and cover the ages from three to 12. They are simple tasks such as the child might be expected to perform and they are graded and grouped to suit the age of the child. A subject who performs the tests assigned to his age in a satisfactory manner is classed as normal; if he can perform only tasks of a child several years younger than his age, he is looked upon as sub-normal; but if he can perform those of a child several years older than his age he is classified as supernormal. Under the title 'A Method of Measuring the Development of Young Children,' the Binet-Simon work of most importance was published in Chicago in 1913, and the 'Psychological Method of Testing Intelligence' appeared in Boston the following year.

**BINGEN,** Germany, town of the grand-duchy of Hesse, 17 miles west of Mainz, on the left bank of the Rhine and the right of the Nahe, opposite Rudesheim. It contains a Gothic church dating from the 15th century. The castle of Klopp and the sanctuary of Saint Roch are situated nearby on the Rochusberg. A dangerous passage on the Rhine, called the Bingerloch, has been opened up by the blasting of sunken rocks, leaving a channel of 210 feet wide. On the opposite side of the river rises the Niederwald Denkmal, raised to commemorate the victories of 1870–71. In a neighboring castle the Emperor Henry IV was detained a prisoner in 1105, and on a rock in the middle of the river stands the Mäusethurm or Mousetower, the scene of the ancient legend of Archbishop Hatto, who was devoured by rats in 969. Drusus Bridge over the Nahe near its mouth was first built by Drusus in 13 B.C. Bingen was a town of the Belgæ and here a battle took place in 70 A.D. in which the Romans inflicted a defeat on the Gauls. Bingen came under the rule of the see of Mainz in 1281, was taken and retaken several times during the Thirty Years' War and in 1689 was burned by the French, who blew up the castle. From 1797 to 1814 it belonged to France and

after 1815 was incorporated with Hesse. Bingen is the market for the sale of wines produced in the neighborhood. The principal industries are the manufacture of leather, liquors, tobacco, starch, and there is also considerable trade in cattle, grain, coal and iron. The Rhenish Technical College is situated here. Pop. 9,950.

**BINGER,** băn-zhā, **Louis Gustave,** French soldier and African explorer: b. 14 Oct. 1856. He made his way from the upper Niger to Grand Bassam in 1887–89, thus connecting the French possessions with the Ivory Coast. In 1892 he was commissioner of the French government to settle the Ashanti boundaries with England.

**BINGHAM, Amelia** (family name Smilley), American actress: b. Hicksville, Ohio, 1869. After studying at the Ohio Wesleyan University, she married Lloyd M. Bingham, who died 22 Dec. 1915. Her first appearance was in the People's Theatre, New York city, in 'The Power of Gold.' After six years she became leading lady at the New York Empire Theatre in 'His Excellency the Governor,' playing leading rôles continually thereafter. In 1901 she appeared with her own company in 'The Climbers,' 'A Modern Magdalen' and 'The Frisky Mrs. Johnson.' During the season of 1914 she played Mrs. Opdyke in Bronson Howard's 'The New Henrietta,' a revision of 'The Henrietta.'

**BINGHAM, Hiram,** American Congregational clergyman: b. Bennington, Vt., 30 Oct. 1789; d. 11 Nov. 1869. He was graduated from Andover Theological Seminary in 1819, and was one of the first missionaries of the Congregational Church to be sent to the Sandwich Islands, where he acquired much influence with the natives.

**BINGHAM, Joel Foote,** American clergyman: b. Andover, Conn., 11 Oct. 1827; d. Hartford, Conn., 18 Oct. 1914. He entered the Congregational ministry, but in 1871 exchanged it for that of the Episcopal Church. He has written 'The Christian Marriage Ceremony'; 'Francesca da Rimini' (1897–1904), and 'Sacred Hymns and Napoleonic Ode of Alexander Manzoni' (1904), translations.

**BINGHAM, John Arende,** American politician: b. Mercer, Pa., 1815; d. Cadiz, Ohio, 20 March 1900. He studied at Franklin College, Ohio, and became a lawyer in 1840. He was elected to Congress as a Republican in 1854 and retained his seat 1855–63. He was chairman of the managers of the House in the impeachment of Judge Humphreys for high treason, in 1862. President Lincoln appointed him military judge-advocate in 1864 and, later in the same year, solicitor of the United States Court of Claims. He was special judge-advocate in the trial of the assassins of President Lincoln. He sat in Congress again 1866–73. He was one of the managers of the impeachment trial of President Johnson. From 1873 to 1885 he was United States Minister to Japan. Consult Foraker, J. B., «John A. Bingham» in 'Publications' of the Ohio Historical Society (Vol. X, 1902).

**BINGHAM, Joseph,** English clergyman and antiquarian: b. Wakefield, Yorkshire, 1668; d. Havant, 17 Aug. 1723. He distinguished himself as a student at University College, Oxford, and devoted his attention particularly to ecclesiastical antiquities. He was graduated in 1688 and became a fellow the following year, but had to withdraw from the university on the charge of preaching unsound doctrines. He now became curate of Headbourn-Worthy, near Winchester, and there, while possessed of a scanty living on which his numerous family could barely subsist, had the merit of composing one of the most learned works of which his Church can boast. This work, 'Origines Ecclesiasticæ, or The Antiquities of the Christian Church,' was published in 10 volumes octavo (1708–22) and is still a standard on the subjects of which it treats. The best modern edition is that published at the Clarendon Press (1855, 10 vols.). It was soon translated into Latin and published in Germany, and has since appeared in various languages. In 1712 he was collated to the living of Havant, near Portsmouth. He lost his savings in the South Sea Bubble of 1720.

**BINGHAM, Theodore Alfred,** American public official: b. Andover, Mass., 14 May 1858. Graduating from the United States Military Academy at West Point in 1879, he served in the engineer corps of the army until 1890, after which he became United States military attaché at Berlin and Rome. In 1897, when he had attained the rank of colonel, he was put in charge of the public buildings and grounds at Washington, in which capacity he served until 1903. He then undertook the supervision of the engineering district of Lake Ontario and Lake Erie for a whole year, after which he was retired with the rank of brigadier-general. In 1906 he was appointed police commissioner of New York city, where he served until 1911, when he was removed by Mayor Gaynor on the charge of insubordination. Later in the same year he was appointed chief engineer of highways of New York city but retired after two months' service. He was then appointed consulting engineer in the department of bridges but resigned again in 1915.

**BINGHAM, William,** American educator: b. North Carolina 1835. He was graduated at the University of North Carolina in 1856 and succeeded to the management of a classical school at Mebanesville, Alamance Co., N. C., which had been conducted with success by his father and grandfather. He published 'A Grammar of the Latin Language,' 'A Grammar of the English Language' and 'Cæsar's Commentaries,' with notes and a vocabulary.

**BINGHAM,** Utah, town of Salt Lake County, 20 miles southwest of Salt Lake City, on the Bingham and Garfield, and the Denver and Rio Grande railroads. It contains a hospital and has large copper-mining interests. Pop. 2,881.

**BINGHAMTON,** N. Y., city and county-seat of Broome County, at the junction of the Chenango and Susquehanna rivers and on several railroads, 50 miles east of Elmira. It stands more than 867 feet above tidewater, and both rivers are here spanned by several bridges. The city is supplied with water by the Holly system, which cost over $1,500,000; has nearly 100 miles of streets lighted by electricity, and contains over 30 churches and chapels, public

school property valued at over $1,175,000, a public library, two national banks and assessed property valuation (1910) exceeding $31,486,554. Among the attractions of Binghamton, which has been named the "Parlor City," are Ross Park, Ely Park and O'Neil Park, and the driving parks and fair grounds. The noteworthy buildings include the State asylum for the insane, United States government building, State armory, courthouse, city hall, two orphan asylums, an opera house and the Casino and the home office building of the Security Mutual Life Insurance Company. Binghamton ranks as the third cigar-manufacturing city in the United States, and according to the census of manufactures for 1914, it then had 245 industrial establishments of factory grade, employing 8,413 persons, of whom 7,428 were wage-earners, receiving annually $3,653,000 in wages. The capital invested aggregated $18,237,000, and the value of the year's output was $18,360,000; of this, $7,976,000 was the value added by manufacture. Other important manufactures are valves, cigars, silks, scales, chemicals, furniture, sheet-metal work, glass, gloves and refined oils. An interesting feature of the city is the large number of cottages owned by the working people. Binghamton received a city charter in 1867. Pop. (1900) 39,647; (1915) 53,668.

**BINGLEY**, England, town of the West Riding of Yorkshire, on the Aire, five and one-half miles northwest of Bradford, 15 miles northwest of Leeds and on the Leeds-Liverpool Canal. The town contains the interesting church of All Saints (restored 1871) in the Perpendicular style, several other places of worship, an endowed grammar school and a mechanics' institute. The chief industries are worsted-spinning, cotton and paper manufactures. The town has a public library, free public baths and owns its water and gas works. Pop. 18,759.

**BINMALEY**, bĭn-mą-lā'ē, Philippines, a town of the province of Pangasinen, Luzon, situated on the Gulf of Lingayen, in the western part of the island of Luzon, only a few miles east of the town of Lingayen. Pop. 13,787.

**BINNACLE**, a brass or wooden stand supporting a helmet-shaped hood in which is placed a ship's compass. In the front of the hood is a glass-covered aperture through which the helmsman may observe the compass, and on each side is an opening into which are fitted the lights illuminating the compass at night.

**BINNEY, Amos**, American merchant and naturalist: b. Boston, Mass., 18 Oct. 1803; d. Rome, Italy, 18 Feb. 1847. He was graduated at Brown University in 1821, engaged in business with success and devoted his leisure to natural science. He was one of the founders and, at the time of his death, president of the Boston Society of Natural History. His writings on the land shells of America are in the 'Journal' and 'Proceedings' of that Society. His chief work, 'Terrestrial and Air-Breathing Mollusks of the United States and Adjacent Territories of North America' (3 vols., 1847–51), was issued under the direction of Dr. A. A. Gould. Binney was a patron of artists and scientists and did much to advance the study of natural history in America. The Museum of Comparative Zoology, Harvard University, contains the collection of land and fresh-water shells of North America and preparations of their anatomy made by Amos Binney and his son.

**BINNEY, Hibbert**, Canadian clergyman: b. Cape Breton Island, 12 Aug. 1819; d. 1887. He was graduated at Oxford University in 1842. He became bishop (Anglican) of Nova Scotia in 1851.

**BINNEY, Horace**, American lawyer: b. Philadelphia, 4 Jan. 1780; d. 12 Aug. 1875. He was graduated at Harvard in 1797, and for many years was at the head of the Pennsylvania bar. He had a number of distinguished cases in his career, the most noted one being the defense of the city of Philadelphia against the executors of Stephen Girard. He was a member of the 23d Congress, in which he opposed the Administration in the question of removing public funds from the United States Bank, and a director in the United States Bank. He withdrew from active practice and confined himself to the preparation of written opinions. In 1850 he retired altogether. He was frequently called upon to address great public gatherings. He wrote many valuable papers and was the author of 'The Leaders of the Old Bar of Philadelphia' (1858); 'The Privilege of the Writ of Habeas Corpus Under the Constitution,' in which he supported Lincoln's policy of suspending the right of habeas corpus during the Civil War; and 'Reports of Cases in the Supreme Court of Pennsylvania' (6 vols., 1814); 'Life and Character of Chief Justice Tilghman' (1827); 'Life and Character of Chief Justice Marshall' (1835); 'Sketch of the Life and Character of Justice Bushrod Washington' (1858). Consult Binney, C. C., 'Life of Horace Binney' (Philadelphia 1903).

**BINNEY, Thomas**, English theologian: b. Newcastle-on-Tyne 1798; d. 24 Feb. 1874. A bookseller's apprentice in his youth, he worked from 7 in the morning till 9 at night. He was trained for the Congregationalist ministry at Wymondley Seminary, Hertfordshire; served after ordination (1824) at Bedford and Newport, Isle of Wight, and in 1829 was called to the Weigh House Chapel, London, where he ministered for 40 years. He was a voluminous writer on polemical subjects, vehemently anti-Ritualistic; raised a storm of controversy over a statement he made that "the Church of England damned more souls than she saved," but regarded with regret the baldness of Nonconformist Church services and was the first to cause the prose Psalms to be chanted in public worship. He was the author of 'Is It Possible to Make the Best of Both Worlds?' and the hymn 'Eternal Light! Eternal Light!' Consult H. Alton's 'Memoir' prefixed to his sermons, and 'Lives' by Paxton Hood and I. Stoughton (1874).

**BINNIE, Sir Alexander R.**, English civil engineer: b. London, 26 March 1839. He was educated at private schools. He worked on Welsh railways 1862–66 and for the Indian Public Works Department 1868–74; was engineer of the city of Bradford 1875–90; constructed the Nagpore waterworks, the Blackwall tunnel, the Bradford waterworks, the Parking Road Bridge, etc. In 1897 he was made chief

engineer of the London county council and in the same year he was knighted. His publications include articles and reports on professional subjects, lectures on waterworks, papers on rainfall, etc.

**BINNS, Charles Fergus,** ceramic expert: b. Worcester, England, 4 Oct. 1857. A son of the director of the Royal Porcelain Works in his native city, he was superintendent of various departments there 1872–97. Leaving England in the last-named year, he became principal of the Technical School of Science and Art, Trenton, N. J., 1897–1900, and since June 1900 has been director of the New York State School of Clay Working and Ceramics, Alfred, N. Y. He has written 'Ceramic Technology' (1896); 'The Story of the Potter' (1897); 'The Potter's Craft' (1910), and has contributed extensively to the 'Transactions' of the American Ceramic Society.

**BINOCULAR MICROSCOPE.** See MICROSCOPE; OPERA GLASS; TELESCOPE, etc.

**BINOMIAL,** in algebra, a quantity consisting of two terms or members, connected by the sign + or —. The binomial theorem is the celebrated formula which shows how to obtain any power of a given binomial, as $a + b$, from the two terms, $a$ and $b$, and the exponent of the power. It gives as the value for $(a+b)^n$

$$\Sigma \frac{a^k b^{n-k} n!}{k!\,(n-k)!}$$

for all integral values of $k$ for which the expression has a meaning. This theorem, frequently called the Newtonian theorem, was known, as far as relates to integral positive exponents, to several mathematicians before Newton. But Newton was the first who taught its application to fractional and negative exponents; and this discovery, one of the most important of those made by that great man, is engraved upon his tombstone. The discovery of the correct understanding of the limitations under which this theorem is valid, however, belongs to the last century.

**BINONDO,** Philippines, a native town near Manila, on the right bank of the Pasig, now a suburb of the walled European city, having been annexed to it by a magnificent stone bridge 411 feet in length. The bridge of Binondo is regarded as the most remarkable structure ever erected by Europeans in the Indian archipelago.

**BINTURONG,** a large civet of the Malay Peninsula and islands (*Arctitis binturong*), which spends its life in the trees, where it is assisted in climbing about by its long, bushy, prehensile tail. It passes the day asleep in the top of a tree and travels about at night in search of small mammals, birds, etc., but also eats leaves and fruit. It is dirty yellow when young, but black when fully grown, and reaches a length of two and a half feet, exclusive of its long tail, which may measure six feet 10 inches in length.

**BINUE,** bĭn'wĕ, or **BENUE,** Africa, the largest and most important tributary of the river Niger. See BENUE.

**BINYON, Laurence,** English poet: b. Lancaster, 10 Aug. 1869. He has been an assistant in the British Museum from 1893 and assistant keeper from 1909. Besides editing the 'Shilling Garland' (1895–98) he has published 'Lyric Poems' (1894); 'Poems' (1895); 'London Visions' (1895–98); 'The Praise of Life' (1896); 'Porphyrion and Other Poems' (1898); 'Western Flanders' (1898); 'Odes' (1900); 'Catalogue of English Drawings in the British Museum' (1898–1907); 'Attila' (1907); 'England and Other Poems' (1909); 'The Flight of the Dragon' (1911); 'Botticelli' (1913); 'Auguries' (poems, 1913); 'The Winnowing Fan' (1915); 'Bombastes in the Shades' (1915). Consult Streatfield, 'Two Poets of the New Century.'

**BINZ, Karl,** German physician and pharmacologist: b. Bernkastel, 1 July 1832; d. 1913. After studying at Würzburg, Bonn and Berlin he became, in 1868, professor at Bonn. In the following year he founded the Pharmacological Institute of Bonn. He was the first to demonstrate the action of quinine and he has done much important research in pharmacology and pathology. He has written many works, among which are 'Ueber den Traum' (1878); 'Vorlesungen über Pharmakologie' (1891); 'Aether gegen den Schmerz' (1896); 'Rezeptsünden und ihre Folgen' (1899).

**BINZER, August Daniel von,** German author: b. Kiel, 30 May 1793; d. Reisze, 20 March 1868. He studied law at the universities of Kiel and Jena, after which he was both teacher and newspaper editor for some years. Among his works are 'Die Dämmerungsstunden der Familie Abert' (Altona 1833); 'Venedig im Jahr 1844' (Pest 1845); a German translation of Benjamin Franklins' 'Autobiography and Writings' (Kiel 1829); 'Erzählungen und Novellen' (in collaboration with his wife, under the pseudonym "A. T. Beer," 3 vols., Leipzig 1836). He is also the author of several songs still popular in Germany, among them one beginning with the line "Wir hatten gebauet ein stattliches Haus."

**BIO-BIO,** bē'ō-bē'ō, Chile, an eastern province with Concepción on the north, the Argentine territory of Neuquen on the east, Malleco and Cautin on the south, and Arauco on the west. Its area is 4,158 square miles. The rainfall is rather excessive and the variations in temperature are somewhat extreme. There are three departments, La Taja, Mulchen and Nacimiento. The capital of the province is Los Angeles, situated in the Central or Longitudinal Valley (see CHILE) on the banks of a tributary of the Bio-Bio River. It is a mountainous province, with moderately high peaks and good valleys. Viticulture is carried on in the north; there are herds of cattle on the pastures; the cereals are cultivated and the forests exploited. Pop. over 100,000.

**BIO-BIO,** the largest river of Chile. It has a west-northwesterly course of about 200 miles, from near the volcano of Antuco in the Andes to Concepción on the Pacific Ocean. It is two miles wide at its mouth, and is navigable for 100 miles.

**BIOGENESIS,** (1) the theory of the genesis or origin of all living beings from living beings. It is opposed to abiogenesis, which im-

plies that at the present time the simplest, lowest forms of life may arise by spontaneous generation (q.v.) The principle of biogenesis was first placed on a scientific basis by Harvey, who demonstrated that living beings arise from eggs, as stated in his famous aphorism, *omme vivum ex ovo*. As now modified all organisms are known to arise from living matter, that is, either from germs, spores, seeds or eggs. (2) The history of a living organism biogenesis, or biogeny, is divided into *ontogeny*, or the development of any individual organism, and *phylogeny*, or the development of the class or other group of organisms, to which the individual belongs. (3) Biogenesis also may be interpreted as meaning the different modes of reproduction (q.v.) whether sexual, or asexual or by fission or budding. See BOTANY; EVOLUTION; EMBRYOLOGY; ZOOLOGY, etc.

**BIOGENETIC LAW.** See RECAPITULATION THEORY.

**BIOGRAPH**, an apparatus that displays in rapid sequence a long series of photographs. It belongs to a class of apparatus which followed the invention of the kinetoscope, and includes the vitascope, cinematograph, phantoscope, etc. It differs from the kinetoscope in that instead of showing small pictures through an enlarging lense by reflected light, it projects them on a screen. The biograph may be described as a stereopticon combined with such mechanism as is requisite for the precise manipulation of the celluloid picture film. When the apparatus is set in motion the long band of celluloid passes quickly, though not continuously, behind the projecting lens, between spools or bobbins which revolve at a uniform rate. While thus passing from its original spool to the winding reel the film encounters certain pulleys and toothed rollers that serve to direct its movements accurately. Along its edges are numerous small perforations into which the teeth of the rollers fit with precision, and by this means the small transparencies are made to occupy exactly similar positions when their images are projected upon the canvas. As each picture in its turn attains this critical position it is momentarily brought to a standstill. At the same time a shutter is opened and an image of the picture flashes for an instant upon the screen. The shutter is then quickly closed, the picture resuming its motion, while its successor in the series is brought into a similar fixed situation. This temporary stoppage of the film (or rather of a portion thereof), as each picture attains its proper place behind the projecting lens, is a very essential feature of the process.

At the instant of its arrival a portion of the film on the preceding side of the picture will be in an unstrained or slack condition. The "slack" is then taken up by a continuously moving sprocket pulley, whereupon a rod or roller is quickly brought to bear against the now tightened film, pressing it to one side and as quickly releasing it. By this movement the next picture is pulled into its fixed position, while the film is made taut (or nearly so) on the following side of this picture. These operations are repeated continuously until the entire film has passed through the holding device in rear of the lens.

The camera used in taking the negative from which motion pictures are made is provided with a similar mechanism to that employed in showing the finished photographs. The picture roll is replaced by a roll of sensitized film, upon which the exposures are made at the rate of from 25 to 50 per second. The films range in length from 50 to 200 feet, and contain, when finished, from 800 to 3,000 negatives. After the film has been subjected to the usual photographic operations it is made to pass, in contact with a second sensitized film, beneath an incandescent lamp, and by this means the photographs are printed upon the sensitized surface. This second film is then in turn passed through the various photographic processes, and when complete it is wound on a spool which may then be placed in the machine used for exhibiting the pictures.

**BIOGRAPHIA LITERARIA.** Samuel Taylor Coleridge's 'Biographia Literaria' was originally intended as a mere preface to a collected volume of his poems, explaining and justifying his own style and practice in poetry. The work grew under Coleridge's hands to a literary autobiography, including, together with many facts concerning his education and studies and his early literary adventures, an extended criticism of Wordsworth's theory of poetry as given in the preface to the 'Lyrical Ballads' and a statement of Coleridge's philosophical views. The work was published in two volumes in 1817. In spite of its miscellaneous character, the 'Biographia' remains one of the few prose works of Coleridge which continues to be read, and it is valuable as being the chief vehicle of his very important contributions to critical theory. In the first part of the work Coleridge is mainly concerned with showing the evolution of his philosophic creed. At first an adherent of the associational psychology of Hartley, he came to discard this mechanical system for the belief that the mind is not a passive but an active agency in the apprehension of reality. The discussion involves his definition of the imagination or "emplastic power," the faculty by which the soul perceives the spiritual unity of the universe, as distinguished from the fancy or merely associative function. The later chapters deal with the nature of poetry and with the question of diction raised by Wordsworth. While maintaining a general agreement with Wordsworth's point of view, Coleridge elaborately refutes his principle that the language of poetry should be one taken with due exceptions from the mouths of men in real life, and that there can be no essential difference between the language of prose and of metrical composition. A keen and appreciative critique on the qualities of Wordsworth's poetry concludes the volume. Consult 'Biographia Literaria,' edited by J. Shawcross (London 1907), and Elton, Oliver, 'A Survey of English Literature,' containing the best discussion of the issue between Coleridge and Wordsworth.

JAMES H. HANFORD.

**BIOGRAPHY**, in its general sense, literature treating of the lives of individuals; in its restricted meaning the history of a person's life. When composed by the subject of the

narrative it is called an autobiography. Biography has existed in one form or another from the most ancient times. In the book of Genesis there are biographies, or at least memoirs, of Adam, Noah, Abraham, Isaac, Jacob, Joseph and others. Homer's 'Odyssey' may be considered as an extended biography of Ulysses, limited, however, to the most interesting period of his life, that of his wanderings. Though the 'Iliad' may be loosely called a history of the Trojan War, yet, accurately, it is a chapter from the biography of Achilles, describing calamities he brought upon the Greeks by the revenge which he took on Agamemnon for carrying off his female captive Briseis. The most elaborate Greek biography was Plutarch's 'Parallel Lives' ('Bioi Paralleloi'), consisting of 46 memoirs of Greek, Roman and other celebrities; it was published about 80 A.D. In 44 B.C. Cornelius Nepos had sent forth a biographical work, his 'Vitæ Imperatorum' ('Lives of Commanders'). Under the Greek and Roman civilization, however, the individual was absorbed in the state. When Cincinnatus or Coriolanus is mentioned, we recall rather an act than a person. The elder Cato wrote a history of the Roman republic, in which there was not found a single proper name. He said simply: "The consul proposed such a law, the general gained such a battle."

Biography differs from history, properly so called, in considering public and national events, if at all, only in their relations to a single personage. It assumes various forms, being sometimes most interested in the circumstances and external career, the *curriculum vitæ*, of its subject; sometimes regarding chiefly intellectual and moral qualities and development; sometimes being hardly more than a catalogue of a man's positions and changes of position; and sometimes, like the autobiography of Goethe, fit to be entitled truth and poetry; sometimes being formally narrative throughout, but often presenting the hero also by his letters and notes of his conversation. A biography may be a panegyric or a diatribe, or the life of a man may be used as only a frame on which to attach moral reflections. Its true aim, however, is to reveal the personal significance of those men who have played a distinguished part in the world, either by action or by thought. History has reference to the development of principles, biography to that of character. To observe the growth of a nation or of any institution from the idea on which it was grounded, through its vicissitudes and conflicts, is the part of history. To trace a human life, to remark the manifold efforts, defeats, triumphs, perplexities, attainments, sorrows and joys which fill the space between the cradle and the grave is the province of biography. In history, Scipio at the head of the Roman legions subdued Africa, and Agesilaus struggled against the misfortunes of his country; in biography, the former is seen not only gaining victories, but also gathering cockle-shells on the shore, and the latter not only fighting after defeat, but also riding on a hobby-horse among his children. Plutarch says it does not follow because an action is great that it therefore manifests the greatness and virtue of him who did it, but, on the contrary, sometimes a word or a casual jest betrays a man more to our knowledge of him than a battle fought wherein 10,000 men were slain, or sacking of cities, or a course of victories. Xenophon remarks that the sayings of great men in their familiar discourses and amid their wine have somewhat in them which is worthy to be transmitted to posterity.

Modern biographical literature may be considered to date from the 17th century since which time individual biographies have multiplied enormously. Dictionaries of biography have proved extremely useful, Moreri's 'Historical and Critical Dictionary' (1671) being, perhaps, the first of this class. During the 19th century there were published the 'Universal Biography' (85 vols., 1811–62); 'New General Biography' (46 vols., 1852–66); Chalmer's 'General Biographical Dictionary' (32 vols., 1812–17); Rose's 'Biographical Dictionary' (12 vols., 1848–50); Leslie Stephen's 'Dictionary of National Biography' (completed in 63 volumes, the first of which appeared in January 1885 and the last in September 1901); Appleton's 'Cyclopædia of American Biography' (7 vols., 1887–1900); White's 'National Cyclopædia of American Biography' (New York); 'Men and Women of the Time' (London); 'Who's Who' (London); 'Who's Who in America' (Chicago); Adams' 'Dictionary of American Authors' (1901); Vapereau's 'Universal Dictionary of Contemporaries' (Paris); 'Lamb's Biographical Dictionary of the United States' (8 vols., 1897 *et seq.*); and 'Canadian Men and Women of the Time.' Among works of more limited aim may be noted various 'Lives of the Saints'; Fox's 'Book of Martyrs'; various 'Lives of the Poets'; Boswell's 'Life of Johnson' (1791), the most noted of all English biographies; Lockhart's 'Scott' (1836–38); Forster's 'Dickens' (1872–74); Gaskell's 'Charlotte Brontë'; Cross' 'George Eliot' (1884); Lonsdale's 'Sister Dorothea' (1878); 'Life of Tennyson,' by his son (1897); 'Life of Huxley,' by his son (1901); 'The Life of Gladstone,' by John (afterward Lord) Morley (1903); 'The Life of Benjamin Disraeli, Lord Beaconsfield,' by E. Monypenny' (1910–16). Among notable autobiographies are the first Lord Herbert of Cherbury's 'Autobiography'; Benvenuto Cellini's 'Vita da lui medesimo scritta'; Pepys' 'Diary'; Rousseau's 'Confessions'; Gibbon's 'Memoirs'; Franklin's 'Autobiography'; Newman's 'Apologia Pro Vita Sua' (1864; new ed., New York 1913); Bismarck's 'Autobiography' (2 vols., trans. by Butler, New York 1899).

**BIOLOGICAL SURVEY, Bureau of.** A Bureau of the Department of Agriculture. The bureau has charge of game preservation and protection and the importation of foreign birds and animals, studies the economic relations of birds and mammals to agriculture and investigates the geographic distribution of animals and plants with reference to the determination of the life and crop belts of the country. The bureau has also made a particular study of noxious mammals and birds with the object of exterminating them if necessary. It cooperates with the State fish and game commissions and other departments regarding the interstate commerce in game and plumage for the encouragement of game-farmers. See AGRICULTURE, DEPARTMENT OF.

**BIOLOGY.** The study or science of living organisms, and the phenomena of life. Its field is the whole breadth of the organic world, and it seeks to mark the boundaries which separate living from inorganic nature,— to discover the principles that unify it, the processes by which living things have developed, the nature of life itself and the future in store for it. Biology, then, is the sum of all the special departments of study which deal with plants, animals and man in his animal relations, such as botany, zoology, anthropology, and their subordinate or associated sciences; that is, bacteriology, microscopy, physiology and many more. In his outreaching toward the causes and principles underlying its phenomena, the philosophical biologist must therefore understand organic chemistry, and the laws of electricity, light, heat, and mechanics, as they relate to animal needs; and at the other extreme he must consider psychology as an integral part of his domain.

This array of responsibilities and of objects for investigation seems too formidable for any one mind to undertake or a lifetime to encompass, and it would be were not the realm of living nature capable of resolution into simple elements; unified in its fundamental structure; and controlled in its developmental growth by definite "laws of being," which have come more and more clearly into view as knowledge of details has increased. The classification and co-ordination of the enormous mass of facts incessantly poured into his laboratory and library by experimenters and observers, to illuminate the truth by some generalization, or to exhibit a plan, law, type of structure or growth, is the high purpose of the thoughtful biologist; and the greatest names in the science,—Aristotle, Leibnitz, Harvey, Malpighi, Linné, Buffon, Lamarck, Treviranus (who in 1802 first used the term *biology*), Cuvier, Galvani, Goethe, Lyell, Von Baer, Owen, De Blainville, Leuckart, Agassiz, Darwin, Wallace, Kowalewsky, Müller, Haeckel, Marsh, Cope, Hyatt, Weismann and many others,— have been those of men who had these large aims in view, and have contributed toward a solution of the great problem of life. The living world may be pictured as an enormous bundle of tangled and interlaced cords of phenomena, which, moreover, are never quite stationary and fixed, but are always slowly, invisibly, altering and forming new entanglements. Every naturalist is at work upon some part of this bundle, endeavoring to extricate his particular part. In more cases he pays so little attention to anything else, and is so fascinated with the beauty of his single strand, that he draws but little out. In other cases men of larger view or more serious purpose, or societies of them co-operating, disentangle more. The *great* biologist is he who can perceive those who have found a clue, and is able to teach them and the others how still more surely to unravel the intricate threads of phenomena that entwine and conceal the great fact of life at the centre of the puzzle.

To drop the figure, the science of biology in its more restricted and ordinary meaning is the co-ordination of the observed facts and manifestations of the organic world into laws, and the discovery of the principle from which all proceed; that is, its object is to find an answer to the ever-present question of existence — What is Life? To this end goes on the incessant collection of facts in natural history, and it goes on joyously because any moment the biologist may come upon some fact or suggestion which shall contribute to the grand result.

Progress has been made. The study at first was nothing but a miscellaneous gathering of specimens and records of observations. Then a crude sorting out began. Men at first failed to distinguish between what was animate and what was inert. The winds, the lightning, volcanoes, springs were things of life. Later the broad distinction of organic from inorganic was perceived, but even now it is not known whether some of the manifestations of movement and response in certain "slimes" are purely chemical, or due to the presence of actual life.

The next step was the separation of the two great branches of the organic world — plants and animals. The broad features of these groups must have been apparent to primitive man, but it is only within comparatively recent years that such groups as the sponges, the branching forms of the corals, the spreading growths of the polyzoans, have been definitely placed among the animals. The names, "sea-anemone," "moss-animal," "zoophyte," and the like, show the popular error or doubt as to these forms. The relationship of the minute or even microscopic hydroids and protozoans were still longer in doubt; and to this day there is a borderland in this great group (the Protozoa) of minute, unicellular objects where no one is able to draw a certain line between what should be called a plant and what an animal, or even whether some of the objects are organic at all.

As men perceived certain likenesses and unlikenesses the sorting of plants and animals went on crudely at first, on purely superficial or even fanciful grounds. This sufficed fairly well for some large and well-marked groups, as beasts, birds, fishes, insects, hardwood trees and the like, yet led to many mistakes, such as placing whales with the fish and the bats with birds. Meanwhile students here and there had become interested in special groups, and each called his pursuit a science. Thus arose Ornithology — the study of birds: Conchology, the study of shells (in which for a long time little attention was paid to the animal that made them!); Anatomy and Physiology, the study of structure, at first confined wholly to the human form, and only lately to animals in general, when it was distinguished as Comparative Anatomy; Botany, the study of plants; and so on. In each, men gathered and recorded specimens and facts, as a rule from a single neighborhood. Nevertheless, curiosity began to inquire beneath the surface. Plants were pulled apart, animals dissected and resemblances and contrasts of structure were noted. Naturalists traveled, and found that the creatures of the world were more numerous than had been suspected, and varied with climate, soil, height above the sea and diverse conditions, and when records and specimens from many localities were gradually accumulated in great museums, likenesses and contrasts appeared that had not been visible in the small local cabinet. Materials were thus obtained for more intelligent arrangement, and classification became one of

the most important sciences in the scope of biology. The great service an accurate arrangement of living things would render to an inquirer as to their nature was perceived, and scientific men everywhere searched for facts which should fill the gaps in their knowledge. The criteria were made more and more exact, and as classification was perfected it became increasingly evident that the criteria for all branches were substantially similar, and there came to be perceived certain *plans of structure.* One of the latest and most powerful aids to investigation, the result of the perfecting of the microscope, was the science of Embryology, or the study of the development of a plant from the seed or of an animal from the egg. It went hand in hand with Histology, the study of tissues, and both disclosed the new truth that the structure of both animals and plants was at its basis the same — a cell filled with "life substance" (protoplasm); and that the multiplication of these cells constituted the growth, and their arrangement and limit the form and bulk, of every animal and plant. It was furthermore ascertained that an egg or a seed (in which it is believed that every animal plant begins, in spite of some apparent exceptions) was simply a cell differing, so far as we can yet see, from other cells in the body only by its possession of the potentiality of independent life under the fostering of suitable conditions. Classification had already shown that its groups might be arranged in something like a series from those very simply organized (the one-celled protozoa at the foot of the list) up to the highly complex. Now embryology showed that the changes each individual passed through from egg to birth were a series of changes from simplicity to complexity and furthermore that they suggested a parallel to the features of the successive groups in classification, especially to those of the subordinate ranks of the subject's own class. Palæontology enforced this by a similar parallel, finding that the most ancient animals fossil in the rocks were of simple and generalized structure as compared with those of more modern geological formations: in other words, that structural development has also been historic development.

All these facts changed the point of view of the biologist. Instead of looking at separate animals and seeking to find differences upon which to make new species and subdivide groups, he is now seeking for likenesses — points of unity. It was long ago suggested to thoughtful minds that the world was not always as we found it, but that for a vast period there had been a slow, persistent growth and unfolding. The phenomena of the inorganic world pointed the same way, and hence arose the "nebular hypothesis" — the explanatory theory that the universe developed from a gaseous state, and the earth, as one of its parts, was slowly perfected in pursuance of the forces inherent in its origin. Biologists are only carrying this theory out in a detail when they argue that the facts in their hands can be accounted for only by the supposition that the living beings on the earth have been slowly developed from a primitive source, comparable to the germ-cell, along unequal and ramifying lines of progress under the influences of their changeable environment. This is only a detail,— a flower,— of the general unfolding of the universe which is well called its evolution; it is an *organic* evolution.

In the light of this grand generalization biology is now progressing with an organized force for investigation of the great question as to the origin and nature of life. This has not been answered by any of the fruitful hypotheses, like those of Darwin or Lamarck, which have placed such effective tools in the biologist's hands. Toward the solution of this problem all scientific men are working, consciously or unconsciously. In aid of this purpose are pushed forward the incessant and world-wide collection and preservation of preserved animals and plants — museum specimens; and the systematic and accurate observation and record of local species and their habits and instincts. Much of this seems trivial and dry as dust in the eyes of the ignorant or of those whose minds, being occupied with other thoughts, forget the reason and tendency for these ever-multiplied details of natural history. Patient students toil to the same end in laboratories of anatomy and microscopy, laboriously gather statistics of variation, compile lists of geographical distribution, chisel out of the rocks remains of extinct races, and sort and re-sort in experimental classifications — all this in order to provide the generalizers of the science with more and better factors for the solution of the great focal problem, What is Life, and how came it to be? What has been the net result so far? In one direction the conviction of the universal eminence and force of the principle of evolution; in another the realization of the independent life and action of each separate cell. To the study of the constitution, qualities and behavior of the cell, whether standing alone in the unfertilized egg, or as a naked monad, or one in an interdependent association of millions building up a complex organism, has biology come at last; and not until it has vanquished the difficulties presented by this atom of living and potential protoplasm, the cell, will it accomplish its full purpose.

ERNEST INGERSOLL,
*Author of 'The Life of Animals.'*

**BION OF ABDERA,** Greek mathematician: lived about 400 B.C. He was a pupil of Democritus and is said by Diogenes Laërtius to have been the first who taught that there were countries in the world where the year consists only of a single day and a single night, each lasting for six months (Diog. Laërtius, iv, 58). He must therefore have been acquainted both with the spherical form of the globe and the obliquity of the ecliptic. Unfortunately nothing more is known of his history. He is probably the same one whom Strabo (i, p. 29) calls an astrologer.

**BION OF BORYSTHENES,** Greek philosopher contemporary with Eratosthenes (born about 275 B.C.) and with Zeno the Stoic. Laërtius has preserved an account which Bion gives of his ancestry (iv, 46). His family was sold as slaves and he fell into the hands of a rhetorician who made him his heir. He studied philosophy at Athens, first under Crates of the Cynic school, then took lessons of Theodorus,

surnamed the Atheist; and at last, considering his studies completed, set up for himself. It is not easy to ascertain what his opinions were, as only a few fragments of his numerous writings have been preserved, but he was accused of Atheism, and apparently on good grounds, as he is said to have regarded all questions relative to the nature of the gods and divine Providence as indifferent. He died at Chalcis in Eubœa about 241 B.C. His habits of life were avowedly infamous. Many of his witticisms have been preserved by Laërtius. Horace ranks him as a brilliant satirist (Epist. ii, 2, 60), and Cicero preserves one of his sayings (Tusc. iii, 26). He is also referred to by Athenæus (xiii, p. 591, f. 592).

**BION OF SMYRNA,** Greek pastoral poet, who flourished in the latter part of the 3d century B.C. He was a contemporary of Theocritus whose manner he imitated. On attaining manhood, Bion emigrated to Sicily, where a conspiracy was formed against him and he was basely poisoned. The poems of Bion were chiefly pastoral, occasionally erotic. The fragments of them that are extant fully justify the eulogies of his admirer, Moschus. Their sentiments are tender and delicate; their style is copious, graceful and polished. Seventeen short poems and the famous 'Lament for Adonis' are preserved to us, the last-named furnishing the model for Shelley's 'Adonais,' edited by Ahrens (1855); Meineke (1856); Ziegler (1868); Williamowitz-Moellendorf, 'Adonis' (1900). Consult Smyth, 'Greek Melic Poets' (1900); Susemihl, 'Geschichte der griechischen Litteratur in der Alexandrinerzeit' (Leipzig 1891); Edmonds, 'The Greek Bucolic Poets' (London 1912).

**BIONDO, Flavio,** byŏn'dō flä'vyō, Italian archæologist: b. 1388; d. 1463. He was secretary to the Popes Eugene IV, Nicholas V, Calixtus III and Pius II. His encyclopedias have served as the foundation for all subsequent collections of archæological knowledge. They were called 'Roma instaurata,' 'Roma triumphans' and 'Italia illustrata.' His works and manuscripts are preserved in the Vatican, at Dresden and at Oxford.

**BIONOMICS,** in biology, the study of the habits and modes of life of animals or plants and their relations to each other, to all living beings and to the world around them. It corresponds to "ecology" and to "biology" as used by German naturalists. Wasmann defines biology in the restricted sense of bionomics as —

"The science of the external conditions of existence, which pertain to organisms as individuals and at the same time regulate their relations to other organisms and to the inorganic environment."

It therefore, he says, embraces in its restricted sense —

"First, a knowledge of the mode of life of animals and plants, their nourishment, dwelling, mode of propagation, the care of offspring and their development, in so far as these present external manifestations; hence also, second, a knowledge of the life-relations that obtain between individuals of the same and different species (including all the phenomena of parasitism, symbiosis, etc.), and hence also, third, a knowledge of the conditions of existence which are essential to the life and maintenance of animals and plants."

By conditions of existence are meant the action on plants and animals of climate, soil, light, gravity, heat, the dryness or moisture in the air and soil; the nature of the water, whether salt, fresh or brackish; currents of air and of water; elevation above the sea, also any other physical and biological agents in causing variation in or modification of organisms. As Wheeler states:

"Whenever we undertake the detailed or exhaustive study of an ethological problem, we are led imperceptibly into the details of physiology, morphology, embryology, taxonomy, or chorology, according to the particular aspect of the subject under consideration."

Many of these subjects, falling under the head of bionomics, are treated under the head of evolution (q.v.), as the struggle for existence, mimicry, etc. Another department of bionomics is geographical distribution and distribution in time, together with migration, heredity, hibernation and seasonal dimorphism. The word "bionomics" seems preferable to "ethology," which has been used as the name of the science of ethics; it is also the more comprehensive term. Consult papers by Bessey (*Science,* XV, p. 593); Bather (*Science,* XV, p. 748); Wheeler (*Science,* XV, 20 June 1902). The writings of Réaumur, Audubon, Huber, Lubbock, Plateau, Fabre, Ford, Wasmann, Riley, Wheeler and others deal especially with the habits and economy or bionomics of insects (bees and ants) and birds. Consult also Waether, 'Einleitung in die Geologie,' parts i, ii; 'Bionomie der Meeresthiere' and 'Lebensweise der Meeresthiere.' See ECOLOGY.

**BIOPLASM,** that portion of the protoplasm in living bodies that possesses the physiological qualities of life. This term was first used by Prof. L. S. Beale, an English scientist; the word protoplasm had formerly been used in an analogous sense, but Professor Beale considered that a much wider meaning had been given to this latter term by Huxley and others and therefore introduced the use of the word bioplasm with its narrower signification.

**BIOT,** bę-ō, **Edouard Constant,** French authority on China, son of Jean Baptiste Biot (q.v.): b. Paris, 2 July 1803; d. 12 March 1850. After accompanying his father on a scientific tour to Italy in 1825–26, he undertook the construction of a railway from Lyons to Saint Étienne, the first in France. In 1833 he retired from active life and devoted his leisure to the study of the Chinese. He was the author of numerous articles in the *Journal des Savants* and *Journal Asiatique,* as well as of the 'Dictionnaire des Noms, Anciens et Modernes, des Villes et Arrondissements compris dans l'Empire Chinois' (1842) and 'Essai sur l'Histoire de l'Instruction Publique en Chine' (1847). Besides translations of Chinese works — for example, the historico-chronological 'Tcheou-chou-ni-kien' (Paris 1842) and the 'Astronomical Tcheou-pei,' — he wrote a 'Notice sur quelques procédés industriels connus en Chine, au 17me Siècle'; an 'Examen de diverses séries de faits relatifs au climat de la Chine,' and 'Chine et Indo-Chine.' The printing of his translation of the Chinese Imperial Geography, 'Tcheou-li,' was interrupted for some time by his death.

**BIOT, Jean Baptiste,** French mathematician and physicist of distinction: b. Paris, 21 April 1774; d. there, 3 Feb. 1862. He was educated at the Collège Louis-le-Grand and in 1793 entered the artillery service. Shortly after-

ward he entered the École Polytechnique and thenceforth devoted himself to the study of mathematics and the natural sciences. After teaching physics for some years at Beauvais, he became professor of the same subject in the Collège de France in 1800, and in 1803 was elected a member of the Institute. He stood neutral on the question of the founding of an empire. In 1804 he made a balloon ascent with Gay-Lussac, and in 1806 was made a member of the Bureau des Longitudes. In 1809 he became also professor of physical astronomy in the University of Paris. With the exception of three journeys, undertaken in connection with the measurement of a degree of the meridian, — namely, to Spain in 1806–08, to Scotland, Orkneys and Shetland in 1817, and to Spain and Italy in 1824–25,— his whole life was quietly passed in study and teaching. He published some excellent text-books, which became widely known beyond France. Important works by him are the 'Traité elémentaire d'Astronomie Physique' (3 vols., Paris 1805, and 3d ed., 6 vols., 1850); 'Mélanges scientifiques et littéraires' (1858); as well as works on the astronomy of the ancient Egyptians, Indians and Chinese. His most valuable contributions to science, however, are chiefly contained in communications to learned societies and periodicals. There are few branches of physics which were not advanced by his labors; and in optics especially he made some valuable investigations, particularly in connection with refraction and polarization. See CURVES.

**BIOTITE**, a mineral of the mica group, having its characteristic monoclinic crystallization and very perfect cleavage. Its chemical composition varies widely, but in general it may be said to be a silicate of aluminum, magnesium, iron, potassium; with hydrogen. On account of the presence of magnesium, it is sometimes called "magnesia mica." In color, biotite varies from green to black. It has a hardness of from 2.5 to 3, and a specific gravity of about 2.9. It is a common constituent of granite and gneiss, and of many eruptive rocks, such as andesite and trachyte. Biotite was named for the French physicist, J. B. Biot (q.v.).

**BIPELTATA**, a name given by Cuvier to a family of *Crustacea*, so called because the carapace is divided into two parts or shields; the anterior shield is large, oval in shape, and corresponds to the head; the posterior is angulated in outline, corresponds to the thorax, and bears the foot-jaws and ordinary feet. This family is one of those making up the order of *Stomopoda*, and is now very generally known under the name of Phyllosomidæ.

**BIPENNIS**, a double-headed battle-axe, mentioned in Homer. The Greek literature attributes its use to the barbarians, most especially to the Amazons. Such axes have been found in stone.

**BIPES**, bī'pēz, (1) a genus of reptiles belonging to the order *Sauria*, in which the posterior feet only are visible, though the rudiments of the anterior extremities appear under the skin. This genus is the connecting link between the lizards and the snakes. (2) The name given to a lizard from the Cape of Good Hope, which is called *Anguis bipes* by Linnæus and *Scelotes bipes* by Gray.

**BIPONT EDITIONS**, famous editions of the Latin classics, published in Bavaria in the city of Deux Ponts, whose name in German is Zwei-brücken, and in Latin Bipontium. The publication was begun in 1779, but after the French conquest was finished in Strassburg. The collection forms 50 volumes octavo.

**BIQUADRATIC EQUATIONS**, *in algebra*, equations containing but one unknown quantity, of which, in the equation, the highest power is the fourth. An equation of this kind, when complete, is of the form $x^4+Ax^3+Bx^2+Cx+D=0$; where $A$ $B$ $C$ and $D$ denote any known quantities whatever. See EQUATION.

**BIR**, bēr, or **BIREJIK**, town in Asiatic Turkey, 80 miles northeast of Aleppo, on the side of a steep hill on the left bank of the Euphrates, which is here about 600 yards wide, and 10 to 12 feet deep. The town is surrounded on the land side by a wall, with towers at the angles, and pierced with loopholes. The streets are narrow but clean. In the centre, on a steep rock, is an old ruined fortification. Bir has long been the point where caravans and travelers from Aleppo to Orfah, Diarbekir, Bagdad and Persia, cross the Euphrates. Pop. 8,000.

**BIRAGO**, bē-rä'gō, **Karl, Baron von**, Austrian military engineer: b. Cascina, d'Olmo, 24 April 1792; d. Vienna, 29 Dec. 1845. He studied mathematics at Pavia; was a teacher in a military school in Milan, and in 1825 invented the military bridge which is named for him. He assisted at the building of the fortifications of Linz, the fortifications of the Po near Brescello, and in 1839 built a military bridge across the Po which was especially successful. Nearly all the Continental armies have since adopted his system of bridge construction. In 1844 he was in command of the newly organized Pioneer and Pontonier Corps and became commander of a brigade. He wrote 'Researches in European Bridge Construction.'

**BIRAGUE**, bę-räg, **René de**, Italian politician: b. Milan 1507 (or 1506); d. 1588. He incurred the hostility of Louis Sforza, the duke, but was received favorably by the French King, Francis I, who made him councillor of the Parliament of Paris, governor of Lyonnais, and sent him to the Council of Trent. Under Charles IX his advancement was still more rapid, and in 1570 he was made keeper of the seals. In this capacity he was a party in the secret council at which the massacre of Saint Bartholomew was organized. He zealously defended the Catholic cause against the inroads of French Calvinism, both in its religious and its political aspects. He was bitterly hated by the Huguenots, who in consequence made many derogatory accusations against him. He was made a cardinal in 1578, and held the bishopric of Lavaur and several rich abbeys. He died chancellor of France.

**BIRBHUM**, bēr'boom, a district of the Division Bardwan in Bengal. It is crossed by a few unimportant rivers; has hot springs, iron mines and limestone deposits. The chief agricultural product is rice; there is also a large silk-worm industry. For over 2,000 years Bir-

bhum was the scene of the conflicts of the Aryans advancing into Bengal from Hindustan.

**BIRCH, Harvey,** the principal figure in Cooper's novel, 'The Spy' a romance of the American Revolution.

**BIRCH, John,** English soldier: b. 7 April 1616; d. 10 May 1691. A Presbyterian in religion, he took the side of the Parliament, acting as a captain of volunteers at the siege of Bristol by the Royalists. On the institution of the "New Model" he was ordered to join the army of Fairfax and Cromwell in the west of England, and had Bath entrusted to his care. He commanded a body of horse and foot at the storming of Bristol, an affair in which he so highly distinguished himself as to receive special commendation from Cromwell in his report to the Parliament. In 1645 he was sent against Hereford, and by a stratagem succeeded in gaining possession of the city, and with this the special thanks of Parliament. He objected to many of the proceedings of the party of Cromwell, and was repeatedly thrown into prison. He took an active part in bringing about the restoration of Charles II, and in the latter part of his life was a prominent member of Parliament. He was a man of great personal strength and stature, a rough but most effective public speaker, and had remarkable talents for business and practical affairs. Consult Roe, 'Military Memoir of Colonel John Birch' (in Camden Society Publications 1873).

**BIRCH, Samuel,** English Egyptologist: b. London, 3 Nov. 1813; d. there, 27 Dec. 1885. At the age of 23 he was appointed an assistant in the department of antiquities in the British Museum and latterly became keeper of the department devoted to Egyptian and Oriental antiquities, a post which he retained till his death. His labors did much to advance the study of Oriental archæology, and his eminence in his own province was duly recognized by learned bodies and institutions. In 1870 he assisted in founding the Society of Biblical Archæology, of which he was president till his death. In 1874 he successfully presided over the International Congress of Orientalists that met in London in that year. His studies ranged over a wide field, but it is on his eminence as an Egyptologist that his reputation chiefly rests. His work was invaluable alike to the expert and the beginner: the first dictionary of hieroglyphics, the first elementary grammar of Egyptian, the first set of popular translations into English, and the first treatise on Egyptian archæology, came from his hand. Among his works are 'Introduction to the Study of the Egyptian Hieroglyphs' (to accompany Gardiner Wilkinson's work on Egypt; 1857); 'History of Ancient Pottery, Egyptian, Assyrian, Greek, Etruscan and Roman' (1858); 'Himyaritic Inscriptions of Southern Arabia' (1863); 'Dictionary of Hieroglyphics and Grammar' of the same in the fifth volume of the English edition of Bunsen's 'Egypt's Place in the Universal History' (1867); 'Guide to the Egyptian Galleries of the British Museum' (1874); 'New Edition of Wilkinson's Manners and Customs of the Ancient Egyptians' (1878). For full account of his life and work, consult 'Transactions of the Society of Biblical Archæology' (Vol. IX, 1893).

**BIRCH, Thomas,** English historian: b. London, 23 Nov. 1705; d. there, 9 Jan. 1766. His early taste for reading induced him to prefer a literary life, which he was permitted to choose on condition of supporting himself by his own exertions. He took orders in the Church in 1730, and obtained in 1732 a living in Essex. In 1734 he engaged with some coadjutors in writing the 'General Historical and Critical Dictionary,' founded on that of Bayle, and completed, in 10 volumes folio, in 1741. He subsequently obtained various preferments in the Church, and for about 20 years before his death held the rectories of Saint Margaret Pattens, London, and Depden, in Suffolk. Birch had formed very extensive manuscript collections, which together with his library of printed books, he bequeathed to the British Museum. He produced a large number of historical and biographical works in the course of his laborious life and served as one of the pioneers of literature. He collected fully and faithfully, but without much discrimination, materials relating to the various subjects of his research, which are calculated to afford important assistance to writers possessed of more taste and judgment. Among his works are 'Life of the Right Honorable Robert Boyle'; 'Historical View of the Negotiations Between the Courts of England, France and Brussels, 1592–1617'; 'Life of Archbishop Tillotson'; 'Memoirs of the Reign of Queen Elizabeth, from 1581 till Her Death'; 'History of the Royal Society of London' (of which he was secretary); and he edited the works of Raleigh and Bacon.

**BIRCH, Thomas,** American painter: b. London, England, 1779; d. Philadelphia, Pa., 14 Jan. 1851. Coming to the United States in 1793, he settled in Philadelphia, and painted chiefly portraits until 1807, when he took up marine painting, in which he achieved a high reputation. A number of his works represent naval battles of the War of 1812, and of these the paintings representing the engagements between the *United States* and the *Macedonian*, and between the *Constitution* and the *Guerrière*, are the best known. Both are in the Harrison collection at Philadelphia.

**BIRCH** (*Betula*), a genus of trees belonging to the family *Betulaceæ*. The principal habitats of the trees of this genus are North America, Europe, northern Asia and the Himalayas. The common European birch is indigenous throughout the north, and on high situations in the south of Europe. It is extremely hardy, and only one or two other species of trees approach so near to the North Pole. There are two species natives of Great Britain, *Betula pubescens*, and *B. pendula*, or weeping-birch; the latter by far the more valuable and ornamental. When young it may readily be distinguished by the touch, its bark being covered over with rough exudations, while that of the common tree is soft and velvety. Each species is found exclusively in some districts, but frequently they are interspersed. Throughout the most remote parts of the Highlands of Scotland the birch is often found covering extensive tracts or rocky elevations, where no other ligneous plant is to be met with. It also grows in glens and ravines, adorning the margins of lakes and rivers,

where the silvery whiteness of its trunk and the light and airy habit of its spray form beautiful and interesting pictures, even in the absence of every other tree. Though often found associated with the alder on swampy ground, yet few trees more successfully resist drought. Adapting itself to various soils and situations, it possesses a wider range than any other tree. It is well suited to form a cover on ground from which Scotch pine timber has been recently removed; the exuviæ, which always overspread such places, though hostile to plants in general, are favorable to the birch, which commonly springs up and becomes the successor of the pine. The common tree, where it grows wild, attains a height of about 30 feet, and the weeping variety about 40 feet; but both sorts rise to a much greater height when formed into plantations, particularly when interspersed with other trees. Although the birch is considered by no means a valuable tree, yet its wood, which is light in color and firm and tough in texture, is used for a variety of purposes. Not long ago, in many parts of the Highlands, the birch may be said to have been the universal wood, and was used by the Highlanders for every purpose. They made their beds, chairs, tables, dishes and spoons of it, and even manufactured ropes and horse-harness by heating and twisting its spray. The brushwood is used in forming wicker fences to prevent the inroads of cattle and sheep, in thatching cottages and in forming brooms or besoms. The wood is largely used for fish-casks and hoops, and for smoking hams and herrings. Turners use it for trenchers, bowls, ladles and other wooden ware. Ox-yokes, small screws, women's shoe-heels, pattens and in France wooden shoes are made of it. Birch-trees are not infrequently planted along with hazels, for the purpose of procuring wood to be converted into charcoal for forges. This charcoal is much esteemed, and the soot which is formed on burning the wood constitutes a good black substance for printers' ink. Nearly all the other parts are applicable to useful purposes. The bark is employed in the tanning of leather; and by fishermen for preserving their nets and cordage. In America, northern Europe and Asia the birch is utilized for a great variety of purposes. The North American Indians use it for canoes, boxes, buckets, baskets, kettles and dishes, curiously joining it together with threads made of roots of the cedar-tree. It is serviceable in dyeing a yellow color. In Norway it is dried, ground, mixed with meal, and boiled with other food for swine. The houses or huts in many parts of the north of Europe are covered with the outward and thicker part of the bark, instead of slates or tiles. It is spun into a coarse kind of cordage, woven into shoes and hats, and in some places even made into drinking cups. The Laplanders fasten together large pieces of it to keep off the rain. Abounding in resinous matter, slices of the bark are sometimes tied together to make torches. During a scarcity of corn it has, in several instances, been ground with bread corn, and successfully used as food for men. The leaves afford a yellow dye. The sap, from the amount of sugar it contains, affords a kind of agreeable wine. Birch-wine is produced by the tree being tapped by boring a hole in the trunk, during warm weather, in the end of spring, or beginning of summer, when the sap runs most copiously. It is recorded that during the siege of Hamburg, in 1814, many birch-trees in that vicinity were destroyed in this manner by the Russian soldiers. The dwarf birch, *Betula nana*, is a low shrub, a native of parts of the Highlands of Scotland and of Arctic regions generally. It is never more than two or three feet high, and is generally much less; a full-grown plant being thus a very tiny example of a tree. It is used as fuel, and as stuffing for beds, and its seeds furnish food for ptarmigan and other birds. A similar species is a native of the Antarctic regions. Among others the red or river birch of North America (*B. nigra*) grows to the height of 90 feet, and produces hard and valuable timber. It is known as the red birch from the redness of the bark in the young trees. Another American species, the cherry birch or sweet birch (*B. lenta*), is also called the black birch. It grows to a similar height with the preceding, and yields even more valuable timber, used in making furniture, etc., being tough, fine-grained and taking on a good polish. The paper birch (*B. papyrifera*) is another American species which also attains a large size. Its habitat extends within the Arctic Circle, but it becomes rare and stunted in the extreme north. It receives its name from the fact that thin strips of the brilliant white bark are sometimes used as a substitute for paper. The bark of this species is put to perhaps a greater variety of uses than that of any other, its wood and sap being also utilized. Another American birch is the yellow birch (*B. lutea*), so named from the golden color of the outer bark. It is a large-leaved species, yielding timber used for shipbuilding, etc., and is a native of the eastern parts of Canada and the northeast of the United States. Of Himalayan species may be mentioned *B. utilis*, the Indian paper birch. Its thin papery bark has been used as paper from a remote period, and is still commonly used for packing purposes, for lining the flexible tubes of hookahs, and in other ways, while the wood is tough, and is employed in making articles of various kinds. In its native mountains it may be found at an altitude of 10,000 to 13,000 feet. Several of the pigmy species deserve mention. B. *pumila*, which is generally less than eight feet tall, but sometimes reaches a height of 15 feet, is found from Newfoundland to Minnesota, and south to Ohio. *B. glandulosa*, which extends from Labrador to Alaska and south to Michigan and in the mountains to Colorado, seldom exceeds four feet. Other species, natives of Europe and Asia, resemble the preceding more or less in appearance and uses. Consult Bailey, 'Standard Cyclopedia of Horticulture' (1914); Regel, 'Monographische Bearbeitung der Betulaceæ' (1861); DeCandolle, 'Prodromus 16' (1869).

**BIRCH-PFEIFFER**, bērн'pfīf-ėr, **Charlotte**, German actress and playwright: b. Stuttgart, 23 June 1800; d. 24 Aug. 1868, her maiden name being Pfeiffer. She first appeared on the stage in her 13th year at Munich, and soon acquired a great reputation, her special rôle being that of the heroines of tragedy. In 1825 she married Christian Birch, a writer of some note. After playing with success at places as

far apart as Saint Petersburg, Amsterdam and Budapest, in 1837 she took the management of the theatre at Zürich, and remained in this capacity till 1843. Next year she was engaged for the Theatre Royal, Berlin, and here she remained till her death. Her plays, mostly founded on novels, became well known on almost every stage in Germany, and give evidence of real dramatic talent, as well as of a knowledge of stage effects and what would suit the taste of the theatre-going public. Victor Hugo's 'Notre Dame' and Charlotte Brontë's 'Jane Eyre' furnished her with materials for two of her dramas. She also wrote novels and tales. Her collected dramatic works appeared at Leipzig in 23 volumes (1863–80); her narrative writings in three (1863–65). Her daughter has become well known as a novelist under the name Wilhelmine von Hillern.

**BIRD, Arthur,** American musician: b. Cambridge, Mass., 23 July 1856. After studying music in Berlin under Rohde, Loeschhorn, Haupt and Urban, he went to Canada. In 1886 he conducted at the Milwaukee Musical Festival and soon after returned to Berlin. He studied two summers with Liszt in Weimar. His compositions comprise a symphony, carnival, three suites for orchestra and various other compositions for the piano and organ; the comic opera 'Daphne' (1897); the ballet 'Rübezahl'; and a decimet for wind instruments, which won the Paderewski prize in 1902. He is a member of the National Institute of Arts and Letters.

**BIRD, Charles,** American military officer: b. Delaware, 17 June 1838. He entered the volunteer service in 1861, as first lieutenant, 1st Delaware Infantry; was promoted lieutenant-colonel, 9th Delaware Infantry, in 1864; and was commissioned colonel of the 1st United States Veteran Infantry, 24 Dec. 1865. On 2 March 1867 he was brevetted first lieutenant and captain in the United States army for gallantry in the battle of Fredericksburg, major for Spottsylvania, and lieutenant-colonel for Petersburg, Va. He was appointed a second lieutenant, 14th United States Infantry, in 1886; promoted to major and quartermaster in 1895; and commissioned a colonel and quartermaster of United States Volunteers for the war with Spain in 1898. He became brigadier-general in the regular army 16 April 1902 and was retired 17 June 1902.

**BIRD, Edward,** English painter of note: b. Wolverhampton, 12 April 1772; d. Bristol 1819. He took up art as a profession, without any regular training, and carried on a school of drawing at Bristol. In 1807 he exhibited some pictures at Bath, and had the good fortune to find purchasers for them. In 1809 he had a picture, 'Good News,' in the exhibition of the Royal Academy, and so successful was this work that his name at once became known. He was elected an associate of the Academy in 1812, and his reputation was increased by such paintings as the 'Surrender of Calais,' the 'Death of Eli,' and the 'Field of Chevy Chase' — the last considered his greatest work. The 'Death of Eli' was sold for 500 guineas, and was awarded a premium of 300 by the British Institution. In 1815 he became a full member of the Royal Academy, and he was also appointed court painter to Queen Charlotte. Among his last pictures were the 'Crucifixion'; 'Christ led to be Crucified'; the 'Death of Ananias and Sapphira'; and the 'Burning of Ridley and Latimer.' His talents, however, were considered to be rather for genre than for historic or sacred subjects. Consult Cunningham, 'Lives of British Painters.' There is a catalogue of Bird's works in the British Museum.

**BIRD, Frederic Mayer,** American Episcopal clergyman: b. Philadelphia, 28 June 1838; d. South Bethlehem, Pa., 3 April 1908. He was rector at Spotswood, N. J., 1870–74; chaplain and professor of psychology, Christian evidences and rhetoric, at Lehigh University, 1881–86; and acting chaplain there, 1893–98. He was noted as a hymnologist, and collected one of the most complete and valuable musical libraries in the United States. He edited several collections of hymns; was associate editor of 'Chandler's Encyclopædia'; editor of *Lippincott's Magazine* (1893–98); and published 'The Story of Our Christianity' (1893).

**BIRD, Golding,** English medical and scientific writer: b. Downham, Norfolk, 1814; d. 27 Oct. 1854. In 1838 he took the degree of M.D. at Saint Andrew's, and in 1840 that of M.A. In the latter year he became a licentiate of the Royal College of Physicians, London, and in 1845 was elected a fellow. In 1843 he was appointed assistant physician at Guy's Hospital, where he also lectured on materia medica; and in 1847 he entered on a three years' course of lectures on the same subject at the College of Physicians. He took an active interest in natural history, chemistry and other subjects more or less connected with medicine; and his multifarious occupations overtaxed his strength and undermined his health, so that he died at a comparatively early age. He had by this time acquired a very large practice, and had made his name well known in his profession, more especially by his researches in scientific medicine. A work by which he was more generally known was his 'Elements of Natural Philosophy,' for many years a textbook. A well-known work on 'Urinary Deposits' was also published by him, as also 'Lectures on Electricity and Galvanism in their Physiological and Therapeutical Relations'; 'Lectures on Oxaluria'; etc. A biographical notice by his brother, Dr. Frederic Bird, was published in 1855

**BIRD, Isabella.** See BISHOP, ISABELLA BIRD.

**BIRD, John,** English mathematical instrument maker: b. in the county of Durham 1709; d. 31 March 1776. He set up in London about 1745 as a maker of scientific instruments, having previously received instructions from Graham, the greatest mechanician of the time. In 1749 he received an order to construct a new brass mural quadrant of eight feet radius for the Royal Observatory. This was used by Bradley and by Maskelyne, and continued serviceable for 62 years. Duplicates of it were soon ordered for Saint Petersburg, Cadiz and the École Militaire, Paris — the last employed by D'Agelet and Lalande in determining the declinations of 50,000 stars. He also furnished Bradley with a new transit instrument and a

40-inch movable quadrant. Bird's marked superiority to all other makers of the day is strikingly exemplified by the fact that in 1767 the Board of Longitude paid him £500 on his agreeing to take an apprentice for seven years, instruct other persons as desired, and furnish upon oath descriptions and plates of his methods. A result of this arrangement was the publication of two treatises, named respectively 'The Method of Dividing Astronomical Instruments' (1767), and 'The Method of Constructing Mural Quadrants' (1768), each with a preface by Maskelyne, the astronomer-royal.

**BIRD, Robert Montgomery,** American novelist: b. Newcastle, Del., 1803; d. Philadelphia, 22 Jan. 1854. He qualified as a physician, but soon gave up the practice of medicine for literature. He first became known as a dramatist, having written three tragedies,— 'The Gladiator'; 'Oraloosa'; and 'The Broker of Bogota' — the first of these often acted by Edwin Forrest. His first novel was 'Calavar' (1834), his second 'The Infidel (1835)— both of them having their scene in Mexico, at the time of the Spanish conquest. Then followed the 'Hawks of Hawk Hollow'; 'Sheppard Lee'; and 'Nick of the Woods, or the Jibbenainosay' (1837); the last probably the most popular of all his fictions. Its scene is laid in Kentucky soon after the close of the Revolutionary War, and in it we have a lively picture of pioneer life at this date, and the relentless hostilities between the Indians and the early settlers. He also wrote 'Peter Pilgrim,' a collection of tales and sketches; and 'Adventures of Robin Day,' a novel.

**BIRD, BIRDE, or BYRD, William,** English composer; b. 1538; d. London, 4 July 1623. He was trained in music under Thomas Tallis, and was appointed organist of Lincoln about 1563. In 1575 the two composers obtained the monopoly for 21 years of printing and selling music and music paper; and on the death of Tallis in 1585 Bird became sole patentee. His first work of importance was 'Psalms, Sonnets and Songs of Sadness and Piety, Made into Music of Five Parts' (1588). In 1589 he published a collection of songs, and also a collection of sacred pieces for five voices; a second collection of similar pieces appeared also in 1591. In 1607 he published two books of 'Gradualia,' being a collection of motets for the ecclesiastical year of the Roman Catholic Church; and in 1611 'Psalms, Songs and Sonnets.' He continued all his life a Roman Catholic, but notwithstanding this held a lease from the Crown of lands confiscated from a Roman Catholic recusant, and never lost the appointment which he held in the Protestant Chapel Royal. Bird was the composer of the first English madrigal. He wrote a large number of pieces for the virginals, and also three masses. He was the author of a celebrated canon, 'Non nobis, Domine,' often sung in England by way of grace after meat at public banquets, and which has never ceased to be popular.

**BIRD-CATCHING.** See TRAP-SHOOTING.

**BIRD-CATCHING SPIDER,** a name applied to gigantic spiders of the genera *Mygale* and *Epeira,* which catch birds and suck their blood. The species to which the name was originally given was *Mygale avicularia,* a native of Surinam and other parts of tropical South America. The body of this insect is about two inches long, very hairy and almost black; when the legs are stretched out it measures about a foot across. It lives in holes or crevices and does not spin a net proper, but makes a tubular nest for itself in which it lurks during the day, seeking its prey by night. Other species of Mygale belong to the Malay Archipelago, as *M. javanica* and *M. sumatrensis.* In experiments made with these spiders small birds have been known to die in a few seconds after being bitten. Some of the web-spinning spiders make webs strong enough to entangle small birds, which thus become their prey.

**BIRD-CHERRY,** in America, the wild, red, pin or pigeon cherry (*Prunus pennsylvanica*) of the natural order *Rosaceæ,* a tree 20 to 40 feet high of little use except occasionally for ornamental purposes, as fuel and as a stock for grafting garden cherries upon. Its red, thin-fleshed fruit is sour and somewhat astringent. The name is also given in Europe, to the hagberry of Scotland (*Prunus padus*), whose many varieties are often cultivated for ornament. It sometimes attains a height of 20 feet, bears racemes of flowers larger and a week earlier than the choke-cherry (*Prunus virginiana*), which it somewhat resembles. The fruit, which is black, is smaller than the common cherry and has a disagreeable taste, but is greedily eaten by birds. The wood, which resembles mahogany, and takes a good polish, is used in cabinet-making.

**BIRD DAY,** a special school holiday on 5 May to commemorate the birthday of Audubon. The purpose of the holiday is to stimulate interest in natural history and nature study.

**BIRD LICE,** minute wingless insects parasitic under the feathers of birds and hair of certain mammals, to which they are very annoying. They belong to the sub-order *Mallophaga,* a group of wingless degraded insects allied to the death-tick (*Psocidæ*), stone-flies (*Perlidæ*), and the white ants, altogether constituting the order *Platyptera.* They differ from true lice in having free jaws adapted for biting, and not a sucking beak. The flattened body is corneous, hard above, and the head is horizontal, with three- to five-jointed antennæ; the eyes are small and simple, the mandibles are small, like a hook, and the maxillary palpi, when present, for they are sometimes wanting, are four-jointed, while the labial palpi are two-jointed. The thorax is small and but two-jointed apparently, as the meso- and meta-thorax are united. The abdomen is from nine- to ten-jointed, while the short, thick limbs have two-jointed tarsi and one or two claws.

**BIRD-LIME,** a viscous substance used for entangling small birds so as to make them easily caught, twigs being for this purpose smeared with it at places where the birds resort or to which they are attracted by a call-bird. It is often prepared from the middle bark of the holly, which is stripped off in June or July, boiled in water for six or eight hours, and the water being strained off, is then left to ferment. This process may take two or three weeks, during which it is watered if necessary. At the end

of this time it assumes a mucilaginous form, and after being pounded in a mortar and worked with the hands in water is fit for use. This substance, when prepared, is of a greenish color and very tenacious. Mice are sometimes caught with it as well as birds.

**BIRD OF PARADISE FLOWER.** See STRELITZIA.

**BIRD SPIDER,** also called Bird-catching Spider, gigantic representative of the family *Theraphosidæ,* infesting the tropical jungles of South America. Its body is two inches in diameter, black and hairy, but with outspread legs it has a diameter of nearly 12 inches. Like the tarantula, which it resembles, it builds its nest in the ground in the form of a hole about 18 inches deep, which it lines with a silky-white substance. In spite of its ferocious appearance, it is not dangerous and will not even bite when handled. Its reputation as a bird catcher seems to be founded on a travelers' myth, for the natural food of this strange insect is as yet unknown to science.

**BIRD-TICK,** one of the horse-tick or forest-fly family (*Hippoboscidæ*) of the order *Diptera.* Like the horse-tick the body is much flattened; unlike the Hippobosca, or horse-tick, it has ocelli, but in the short proboscis it resembles the latter fly. In the wings there are six costal veins. There are numerous species, all of which are bird-parasites. *Olfersia americana* lives on the owl and other birds. Certain species of *Lipoptera* live on birds, but afterward migrate to mammals, finally losing their wings through disuse.

**BIRDS.** The birds form that class (*Aves*) of warm-blooded vertebrate animals most distinctive, most easily defined and most popularly known and interesting. They are at once distinguished by their covering of feathers, which is possessed by no other sort of animal; and by the modification of their fore-limbs into instruments for flight (wings). Their aerial existence, from which few have wholly departed, requiring great activity and exertion, has called forth a high perfection of organization, especially in the respiratory and circulatory systems of the body, and has led to the characteristic spindle-shaped form, narrowing from the full chest and shoulders toward a pointed head, which will cleave the air easily, and diminishing toward the rudder-like tail. The graceful form, to which the beauty of birds is largely due, has been brought about by the enlargement of the shoulder-girdle, and its great pectoral muscles, and by the necessity of an increased capacity of chest to contain the comparatively great heart and lungs. In birds such as ostriches, cassowaries, moas and the like, which have ceased to fly, and have developed very strong legs; or in those like the penguins, which have become swimmers and divers, the changes of structure are degenerations from the type, which is a bird with powers of flight.

**Character of the Feather Coat.**— Flight, as well as clothing, is due to the presence of the complicated horny appendages growing from the skin, called feathers, which are peculiar to the class. Their structure is described under FEATHERS. Those of the body are usually small, grow in certain definite tracts (see PTERYLOGRAPHY), varying in the different groups, and form a close jacket, not easily pervious to moisture and a poor conductor of heat, thus conserving the vital warmth and protecting the body against sudden changes of temperature. It is shed (molted) and renewed semi-annually. This body-coat is ordinarily nearly uniform in length and character, but often is varied by ornamental plumes, erectile crests, ruffs, and other modifications, such as are seen in birds of paradise, herons and many others. The feathers are also variously colored in patterns varying with the groups and more minutely with the species, whereby they may recognize each other and be distinguished by us. These colors are usually those of pigments incorporated in the web of the feather itself, but may be due to minute scales on the surface, which break up the light, giving it an iridescent or metallic sheen, conspicuous in hummingbirds and in certain pheasants. The plumage often varies, according to age, sex, season, or all three conditions; and these colors play an important part in bird-life. See COLORATION, PROTECTIVE; NATURAL SELECTION.

**Powers of Flight.**— The bones of the wing and tail support very large, strong "quill" feathers, which, when outspread, support the bird in the air, and when moved in the proper manner carry it forward — enable it to fly, the mechanism and phenomena of which method of locomotion are explained under FLIGHT. The wing-power of most birds is very great, but the speed of their flight is often exaggerated. Few exact facts are at hand, but it is apparent that the highest speed is nearer 50 than 100 miles an hour, although the latter speed is undoubtedly reached by ducks and other swift flyers under pressure of attack or escape. Endurance on the wing is more remarkable. Many sea-birds seem tireless, and swallows, among land-birds, are almost incessantly in the air. During migrations a large variety of birds, including some of the smallest and feeblest, undertake rapid and extensive journeys, reaching in some cases almost half around the world; and some regularly pass over spaces of ocean as much as 2,000 miles in width, while a flight of 500 miles from land to land is accomplished by many species. This is the more notable as a feat because in many cases they are birds which during nine-tenths of the year only flit from bush to bush. In these migratory journeys (see MIGRATION) birds often fly very high; but this is the regular custom of certain ones, especially vultures, which soar beyond human sight, yet will swoop to the earth in a swift dash, betraying great adaptability to sudden changes in atmospheric density. Other notable qualities are the power (largely residing in the tail) to suddenly change speed and direction, helping them to dodge and elude winged pursuers, and to catch the agile aerial insects, upon which many of the smaller species depend for subsistence. The sharpness and quick adjustability of eyesight also involved in this is noteworthy.

These abilities in flight have led to the very wide distribution of birds, which occur in every part of the world yet seen by man; and are the most numerously represented of all terrestrial branches of animal life in the oceanic islands. Nevertheless very few are cosmopolitan, and

1 Motmot
2 Mother Carey's Chicken
3 Mouse-bird
4 American Mockingbird

not many range beyond the confines of a single continent, while many are more narrowly restricted, so far at least as their habitat in the breeding season is concerned. Thus the geographical distribution of birds has been found perhaps the best criterion for the mapping out of zoogeographical regions (see ZOOGEOGRAPHY). The greater number of families of birds is tropical, and both variety of kinds and numbers of individuals decrease toward the poles. A striking fact is the great difference between the birds of the northern and the southern hemispheres — a difference much more decided than exists between those of Europe and North America, or of South America and Australasia.

**Reproduction.**— Birds in every case reproduce their kind by means of eggs protected by a calcareous, often highly-colored shell, laid by the mother a considerable time before they are ready to hatch, which consummation is brought about by the application of warmth. This may be arranged for in two ways. A few birds bury their eggs in rotting vegetation, or in hot sand, and let the chemical heat evolved by the ferment in the former case, or the sun's rays in the latter, accomplish the desired result. The great majority, however, place their eggs in some sort of a receptacle (sometimes a mere hollow on the ground, or hole or niche in a cliff or tree, sometimes in a burrow or nest of more or less elaborate construction (see BIRDS, NESTS OF), and there brood upon, or "incubate" them until the chick matures and emerges. In one class of birds (*Præcoces*) incubation is so long continued, and the embryonic chick becomes so far advanced before leaving the shell, that it is well coated with feathers, and can at once begin to take care of itself. These birds are the sea-birds, water-birds, game-birds and their allies of comparatively low organization. In another class (*Altrices*) of higher organization as a group, the chicks are permitted to break from the shell before they have acquired feathers or are able to move about or obtain food. They must therefore be shielded, defended, fed and cared for by the parents for several days or weeks. Out of this condition have grown some of the most interesting, complicated and delightful features, habits and instincts of bird-life.

**Food and Feeding Methods.**— Birds as a class are omnivorous, but each of the various groups might be characterized by its food, which, more than anything else in the process of evolution, has determined the various types of structure that distinguish their tribes, and which are indexed, as it were, by the form of the bill and feet. Those of lowest organization,— nearest the ancestral type,— are the sea-birds, which live upon fish varied to some extent by mussels and other small marine creatures. Many of the ducks and shore-birds share this marine diet, and numerous wading birds eat fresh-water fish, frogs, crayfish and the like. The great body of ratite and gallinaceous birds, — ostriches, emeus, partridges, pheasants, etc., that run and nest on the ground,— are vegetable-eaters, seeking green leaves, fruits, seeds, lichens, etc., and picking up such insects as come in their way. All the foregoing are præcocial birds, and the young feed on the same things as their parents. These classes have little relation to mankind so far as their food is concerned except that they sometimes devour too much grain or spoil certain plants. Among the higher class, or altricial birds, the fare is more varied, and while there is a very numerous group (the cone-billed or fringilline birds; see FINCH; SPARROW, etc.), which live altogether upon seeds, and a few others, like the kingfishers, which catch fish, the great majority indulge themselves in a miscellaneous diet of both vegetable and animal materials. Some called "soft-billed," and including most of our song-birds, except the finches, are mainly insect eaters, some catching them upon the wing, others digging them out of rotten wood, and the greater number picking them off the leaves of trees or searching for them among the herbage. Another large class, embracing the birds of prey, and a few others, like the shrikes, depend for food upon capturing and devouring other smaller birds, together with such small mammals, reptiles, amphibians, fish and insects as they are able to seize and kill. These are the falcons, owls and their relatives; but a related group, the vultures, varies this fare by feeding upon carrion.

**Usefulness to Man.**— In the case of all of these altricial birds, however, except the birds of prey, the young are fed upon soft insect food, mainly worms, caterpillars and maggots; and the period of their nesting coincides with the time when these larval insects abound. In the feeding habits of these higher birds man has a great interest, for nearly all of the innumerable insects which they capture for themselves, or for the nourishment of their young, are such as are annoying or injurious to him; and experience in many localities has shown that the destruction of bird-life is accompanied by a distressing increase of noxious insects. In the same way the hawks and owls, by their incessant pursuit of mice, and other small animals injurious to agriculture, so reduce the numbers of these pests, as greatly to benefit the farmer; while the useful work done by the vultures, as scavengers, by removing offal and dead animals, is recognized by everyone in the tropical regions where these birds most abound.

Nor does the relative usefulness of birds to man stop here. They not only afford him great pleasure, by their pleasing colors and animated behavior, and delight his ear by their voices, but large numbers of them furnish him with excellent and even dainty food. Lastly, this group has furnished men with several varieties of domestic poultry, such as the turkey, peacock, guinea-fowl, duck, goose and various pigeons and partridges, that are among the most valuable of his animal possessions.

**Distinctive Character of North American Bird-Life.**— In considering the bird-life of North America, the natural southern boundary is the arid region between the United States and Mexico, which acts as an effective barrier. Our bird-fauna is by this means substantially separated from that of Central and South America. On the contrary it strongly resembes that of northern Europe and Asia. While a large number of extensive tropical families are not known north of central Mexico, or are represented by only one or two species, many of the families, the genera and even a fair number of species — not counting the seabirds common to both oceanic coasts — of the United

States and Canada are the same as those of Europe, and, to a less degree, of Siberia. This is especially true of the ducks, geese, shore-birds and birds of prey. When we examine the list of birds of the interior fields and woodlands the general resemblance to those of Europe remains close, while their divergence from those of South America is very striking. In fact, Europe has only two families of small birds not also represented in North America — the starlings and the wrynecks.

The explanation of this condition, like that of so many other facts in our natural history, is to be looked for in the past. Geologists find evidence that in the early part of the Tertiary period, and at intervals during its progress, the northern borders of this continent were connected with both Europe and Asia; and that at times in the past the subarctic climate was comparatively warm— perhaps like that of the Middle States now.

This state of things enabled birds and many other animals of the Old World (which there is reason to believe was provided with animal life before this continent) to pass hither to the New; and abundant time has elapsed since for them to spread all over the continent, and to undergo the changes promoted by the differences in climate and food, which have resulted in the promotion of new American species, all derived from a remote, Old-World ancestry. This history gives a reasonable explanation of both the likeness and the diversity between the two faunas.

**Distribution of Birds in North America.** — One of the most important features in ornithology is the study of geographical distribution (q.v.). Few species of birds extend their range over a whole continent, even in their seasonal migrations; almost all are restricted to a comparatively small area, the limits of which are set principally by their requirements in each case in the matter of food suitable not only for themselves but for their young in the nest.

The birds of widest range are those whose food is widely distributed, such as swallows, seed-eating sparrows, river-haunting sandpipers and ducks, and the predatory hawks and owls that feed on small animals. Even these are more or less affected by local food-conditions.

But the food available to and suitable for birds depends very largely on climate; and climates vary according to geographical conditions. Hence, climate is the greatest factor in determining the range of any species of birds. But by climate in this connection we mean the climate of summer, that is the average degree of warmth and moisture — the average kind of weather during the season when a bird is hatching and rearing its young.

On this continent the isotherms, or lines of equal warmth, do not run straight across from east to west according to the latitude, because of the interference made by our two great north-and-south mountain systems, whose crests are colder than are the low countries between them. Therefore in the middle west they bend northward and run up toward Alaska. Thus a species that is comfortable in Connecticut, but finds Maine too cold, will reside in Michigan, Minnesota and halfway to Alaska — perhaps 20 degrees north of the latitude of Maine — because it finds there an average mid-summer warmth like that of southern New England. Thus are constituted approximately east-and-west districts, or "zones," of life inhabited and characterized by groups of birds requiring similar conditions.

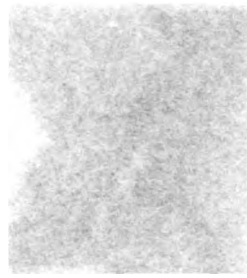
Thus characteristic Arctic birds do not come much south of the treeless region extending in the west from Great Bear Lake to a point halfway down the coasts of Hudson Bay and into northern Labrador. These dwell in the "Arctic" Zone. South of it lies the narrow "Hudsonian" Zone, which swings from the mouth of the Saint Lawrence along the southern shore of Hudson Bay and northwestward to Alaska, including all of that peninsula. South of this the "Canadian" Zone embraces all the wooded parts of Canada except the Saint Lawrence Valley, and sends a long tongue down the Mackenzie River almost to the Arctic Circle. South of this lies the "Transition" Zone — a narrow strip running from New England and New York through southern Quebec and Ontario west and northwest to the prairies of the Dakotas and western Canada; it also extends far south along the cool heights of the Alleghanies and the Rockies. The remainder of the United States east of the Rockies is included in the "Austral" Zone, which is divided into an "Upper" and a "Lower" half, the latter embracing the South Atlantic and Gulf States. The Rocky Mountains form a composite zoological district where altitude has much the same effect on local climate, and consequently on animal life, as has latitude elsewhere. West of them the Pacific Coast is a "region" itself, with many exclusive birds.

Each of these zones has a bird-population which is not to be found outside of it in the breeding season; and that is true also of the vegetation and of other kinds of animals, showing the interdependence of all forms of life, and the reason for the facts noted in the distribution of North American birds.

**Migration of American Birds.**— The general subject of migration (q.v.) is treated elsewhere; but a few words may be pertinently added in this connection as to local peculiarities. Here, as elsewhere, migratory habits are adapted to local conditions, especially as to routes followed: and here as elsewhere most of these are far from keeping to the precise north-and-south direction that many persons suppose birds always take.

In the first place many of our birds make no regular migration at all. These are known as "residents." They are such as are able to find food all the year round in the region where they live; but in the case of some of these there is a partial migration, the individuals of a species moving a short distance southward from the northern border of its range into a more favorable climate, chiefly to escape deep snow. Then a considerable number of species of birds of northern Canada are forced southward in the fall, and visit the region of the Great Lakes, northern New York and New England during the cold weather, but rarely go farther south. These are the true "winter birds."

Running over the list one will find that of about 1,000 species of North American birds only about 225 depart in winter as far south



Migration of American Birds

# FAMILIAR AMERICAN BIRDS

1. Yellow-bellied Woodpecker, or Sapsucker. 2. Black-capped Titmouse, or Chickadee. 3. Black-and-White Creeping-Warbler. 4. Wood Thrush. 5. Cedar Waxwing, or Cherry Bird. 6. Black-billed Cuckoo. 7. Tree, or Canada Sparrow. 8. Red-eyed Vireo. 9. Golden-crowned Kinglet. 10. Little Screech-owl (red phase). 11. American Redstart.

as the Gulf States, and of these only two-thirds entirely leave the United States. The fact that these far-travelers include almost all of the song-birds, or those most noticeable in summer, makes it seem to the uninformed northerner as if the whole bird-tribe had left the country.

**Federal Protection of American Birds.**— The Federal migratory bird regulations of the United States prohibit throughout the United States the killing at any time of the following birds: Band-tailed pigeon; little brown sandhill and whooping cranes; wood duck, swans; curlews, willet, upland plover and all shore birds (except the black bellied and golden plovers, Wilson snipe or jacksnipe, woodcock, and the greater and lesser yellowlegs); bobolinks, catbirds, chickadees, cuckoos, flickers, fly-catchers, grosbeaks, hummingbirds, kinglets, martins, meadowlarks, nighthawks (or bull bats), nuthatches, orioles, robins, shrikes, swallows, swifts, tanagers, titmice, thrushes, vireos, warblers, waxwings, whippoorwills, woodpeckers and wrens, and all other perching birds that feed entirely or chiefly on insects.

**Books about North American Birds.**— Under ORNITHOLOGY will be found a list of books to be consulted by the scientific student. It is desirable here to mention a few books of general interest and giving an account of the bird-life of special districts. For birds of the world generally: Evans, 'Birds' (New York 1900) Beebe, 'The Bird' (ib. 1906); Knowlton and Ridgway, 'Birds of the World' (ib. 1909). For the Eastern States; Chapman, 'Handbook of Birds of Eastern North America' (New York 1912); Chapman, 'Bird-life' (New York 1901); Stearns and Coues, 'New England Bird-life' (Boston 1904); Eaton, 'Birds of New York' (2 vols., col. plates, Albany 1910–12); and books by Thoreau, Torrey, Hoffman, Wright, Abbot, Knight, Parkhurst, Merriam, Miller, Ekstorm, Sharpe and other popular writers. For the Mississippi Valley: Wheaton, 'Birds of Ohio' (Columbus 1891); Dawson, 'Birds of Ohio' (Columbus 1903); Butler, 'Birds of Indiana' (Indianapolis 1890); Barrows, 'Michigan Bird-life' (Lansing 1912); Cory, 'Birds of Illinois and Wisconsin' (Chicago 1910); Goss, 'Birds of Kansas' (Topeka 1899); Coues, 'Birds of the Northwest' (Washington 1874). For the western United States, besides many government documents: Coues, 'Birds of the Colorado Valley' (Washington 1878); Cooper, 'Ornithology of California' (Sacramento 1872); Bailey, 'Handbook of Birds of the Western United States' (Boston 1912); Keyser, 'Birds of the Rockies' (Chicago 1902); Wheelock, 'Birds of California' (San Francisco 1904); and writings of Dawson, Grinnell, Bryant, Henshaw, Keeler, Merriam, etc. For the Southern States: Bailey, 'Birds of Virginia' (Richmond 1912); Wayne, 'Birds of South Carolina' (Charleston 1910). For Canada: Dionne, 'Oiseaux de la Province de Quebec' (Quebec 1906); McIlwraith, 'Birds of Ontario' (Toronto 1894); Macoun, 'Catalogue of Birds of Canada' (Ottawa 1909); and several valuable documents of the Canadian and United States government relating to western Canada. The files of the ornithological magazines, *The Auk* (New York), *Bird-Lore* (New York), *Wilson Bulletin* (Ohio), and *The Condor* (California), should also be consulted. Also the 'Bulletins' and 'North American Fauna' (series) of the United States Biological Survey; the 'Bulletins' of the United States Department of Agriculture; and the 'Proceedings' of the United States National Museum.

ERNEST INGERSOLL.

**BIRDS, Fossil.** Birds are rare as fossils, compared with other vertebrates, and little is known about their early evolution. Four or five hundred extinct species have been described, as against 12,000 living, and most of them are from very fragmentary remains, found in widely scattered places. The explanation of this is found in their small size, their liability to be eaten, dead as well as alive, and the slight construction of their skeletons, which makes their bones less likely to be buried in sediments and preserved as fossils. At a few favorable places, however, as in the Oligocene strata of the department of Allier in France, and the Pleistocene deposits of Fossil Lake in Oregon, they occur abundantly. Birds have been found as far back in geological time as the Jurassic Period of the Age of Reptiles. The supposed bird-tracks of the more ancient Triassic sandstones of the Connecticut Valley are now believed to be mostly, if not all, tracks of dinosaurs (q.v.), a group of reptiles having many bird-like characters. From some ancient offshoot of this group the birds are probably descended, but the early stages of their evolution are not known.

The oldest fossil bird known is the *Archæopteryx*, of which three specimens, one in marvelously complete condition, have been recovered from the upper Jurassic lithographic slates at Solenhofen, Bavaria; and it is a true bird although its skeleton presents many reptilian features. It was about the size of a crow, and had a rather elongated, narrow body, with a small, somewhat flattened head, and very large eye-sockets. The jaws protruded in a beak-like form; but there was no horny beak, and the upper jaw, and probably the lower also, was armed with many slender lizard-like teeth, set in a groove. The legs were of normal length, and had four bird-like toes; but the two bones of the shank (tibia and fibula) were separate, as in most reptiles. The wings were short and rounded, "but unlike all known birds there were three long, slender fingers on each wing, which was armed with a hooked, sharp-edged claw." The wing-quills were large and strong. These feet and the claw-armed wings indicate arboreal habits; but great powers of flight are doubtful, mainly because the breast-bone is poorly preserved, so that its adaptation to large flight-muscles cannot be determined. The bird probably took short flights, and scrambled about in tree-tops by aid of its wing-fingers. Its food can only be guessed at. The most remarkable feature of *Archæopteryx*, however, was its tail, which was as long as its body and head together, and consisted of 23 free bones, as in lizards. Beside it, in the fossil, are many pairs of broad quill-feathers: and it is probable that each caudal bone supported a pair of these, arranged horizontally into a flat series of tail-feathers. What was the covering of the body is not known; but

there are indications of feathering on the legs, and around the neck, and it is certain that the body was not coated with scales. Dr. Frederick A. Lucas said of it: "It was, on the whole, much nearer to the birds than to the reptiles. It is clearly a connecting link between the two classes, and yet we are undoubtedly still very far front the original point where the branch was made from the reptilian stem. . . . It must have taken a very long period of time for the development of such distinctly bird-like feet and feathers."

In point of time the next bird known appears in the rocks of the Upper Cretaceous Age, when the dinosaurs had about disappeared, and the earliest known mammals are faintly discerned as precursors of their class. These are the toothed birds of the subclass *Neornithes,* in two typical forms named *Hesperornis* and *Ichthyornis,* both of which are found fossil in the Cretaceous rocks of western Kansas. The true affinities of both are still in discussion. They were first put together in a "toothed-bird" group called *Odontornithes;* then rearranged into two groups, on account of a difference in dentition: (1) *Neornithes Odontolcæ* (*Hesperornis,* etc.), in which the teeth are set in a continuous groove and (2) *Neornithes Odontotormæ* (*Ichthyornis,* etc.) having teeth set in separate sockets. *Hesperornis* was a flightless, swimming and diving sea-bird, nearly four feet long, with a long neck and strong legs ending in four lobed toes, and set far back at right angles to the spine. It no doubt caught fish as food, and rarely came ashore except to nest, resembling in this respect the habits of a modern penguin. Its structure, however, was very primitive, and its race soon became extinct, without leaving any line of developing descent, although several related forms were contemporary with it.

*Ichthyornis* was also an aquatic, fish-eating bird, but was only about as large as a pigeon. Its wings were long and fitted for powerful flight, and its habits were apparently like those of the modern terns; but its relationship is still in doubt. The tail in both these *Neornithes* had become greatly shortened as compared with *Archæopteryx,* and exhibited the condensation of bones completed in the pygostyle of modern birds.

In the succeeding epoch, the Lower Eocene, at the beginning of the Tertiary Period, or "Age of Mammals," birds had begun to foreshadow modern types with little or no reference to the preceding "toothed" type. That seems to have come to an end; and there is no evidence of any ancestral connection between them and the modern types, whose ancestors, earlier than the Eocene, remain undiscovered. These earliest Tertiary birds are also aquatic, however, and are to be classed with the cormorants, cranes, etc.; but there were also gigantic, ostrich-like forms, such as *Dasyornis, Gastornis* and *Diatryma* — not real ostriches, but with affinities with wading birds. Especially notable among these was *Diatryma gigantea,* of the Wahsatch formations of Utah, — a flightless bird standing 12 feet in height and the largest known fossil bird, hardly exceeded by the great moas (q.v.) of New Zealand. By the end of the Eocene period, a wide variety of kinds of birds occur, usually referable to existing families but not to existing genera. "They are all types," says Osborn, "fitted to inhabit great warm plains, scattered with groves. . . . It is an essentially tropical assemblage [representing birds] now for the most part inhabitants of the equatorial regions of Africa and South America." In the succeeding epoch, the Oligocene, some existing genera may be recognized, and the fauna of that time has "an unmistakeable African aspect," but in the next, or Miocene, period many forms belonging to the North Temperate Zone appear. It is in this Miocene epoch that the plains of Patagonia, then warm and bearing abundant vegetation and a crowded population of strange animals, were the home of certain great ostrich-like birds of which the most remarkable, perhaps, was *Phororhachos,* several species of which are known from bones recovered from the Santa Cruz formation, so rich in fossils. It stood eight or nine feet high, was supported on long legs, very thick and strong, had a rather long tail, fully formed wings, useless, however, for flight, and carried an immense head with a huge hooked beak shaped like an eagle's. A short-legged form of these gigantic birds, whose habits were probably raptorial, is named *Brontornis.*

From this time on the birds became well fixed in modern types; and they appear to have changed but little, in marked contrast to the great evolution of the Mammalia, since the Middle Tertiary.

Consult books listed under GEOLOGY; ORNITHOLOGY; PALÆONTOLOGY.

ERNEST INGERSOLL.

**BIRDS, Nests of.** The receptacles prepared by birds for the holding and security of their eggs and young. The eggs of birds are few in number, larger in proportion and more advanced in development than those of fishes, amphibians or reptiles, and are encased in fragile shells, the rupture of which would be fatal to the enclosed embryo; they are never (with a single exception) buried out of harm's way; and they require a comparatively high degree of warmth, continuously applied, in order to mature successfully into living and energetic young. (See EGG). To meet these complicated conditions of success great care is necessary on the part of the parent-birds; and the necessity for this care increases in proportion to the superiority of organization and development of the bird,— a matter of wide range in the class. The young of the higher forms, as hawks and thrushes, would inevitably perish under the limited care that suffices for such lower forms as the seafowl. In this view birds are divisible into two classes: first, those whose young are developed within the egg, that is before hatching, to such a point that they are able as soon as freed from the shell to run about, pick up their food and to a great degree take care of themselves; second, those hatched before they have reached this state of advancement, and which hence must be fed, protected and guarded by their parents until they have completed their development to the point of self-care. Parental preparations for the former need have regard only to the proper incubation of the eggs; for the latter it must be extended to the safety and comfort of

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1 The Carrion Crow (Catharista atrata)
2 The King Vulture (Sarcorhamphus papa)
3 The Turkey Buzzard (Catharista aura)
4 The Pileated Vulture (Neophron pileatus)
5 The Condor (Sarcorhamphus gryphus)

the young for a period after they have hatched, greater or less according to their helplessness, which varies with the degree of organization. It is among birds of the highest organization, therefore, that complete and elaborate nests are alone to be found, because there only are they required as cradles and homes for the young.

The seafowl, such as penguins and auks, make no nest whatever, depositing only a single egg on some cliff-ledge or sea-islet, almost inaccessible to enemies, and covering it with their warm bodies until the young one hatches, when it is immediately ready to go into the water and fish for itself. The great company of shore-breeding birds, gulls, sandpipers, etc., need do nothing more than scrape a smooth hollow among the pebbles or sea-wrack where their eggs may lie close together and not roll or be blown away. The waterfowl — rails, ducks, pelicans and other,— seeking the greater seclusion of marshes and swamps, must do a little better, making a firm raised bed of earth with a rim around it, or else a platform of reeds, etc., to keep their eggs out of the mud or water. Some of these, as the herons, cormorants and the like, have learned to make their homes in bushes and trees, and these are likely to be rather more substantial than those on the ground, to prevent their falling to pieces in the swaying of the branches, or dropping the eggs over the side or through the bottom. Similarly the great tribe of ratite, limicoline and game-birds, which breed inland on the ground, do not make nests in such sense as are those of the song-birds, but mere beds for the eggs, since these are all *Precoces,* or *Nidifugæ,* that is, of those whose chicks run about as soon as they hatch.

The higher families of birds, however, called *Altrices* or *Nidicolæ* (but more convenient terms for these classes are found in the words «independent» and «dependent,» respectively), must safeguard and nourish their young for a period after birth from the egg, and these must make a home for them which shall be durable and of such a form and finish as shall protect the helpless young from bad weather, observation and attack, and prevent their falling out. These objects are attained with a varying degree of success, but in many cases seem to be almost perfectly accomplished, and the nests resulting have added to them the finish of great beauty. Some birds' nests are marvels of skill, ingenuity and adornment; while others, perhaps made by nearly related species, are rude or slovenly.

**Classifying Nests.**— Several of the earlier writers on ornithology have attempted to classify birds according to their modes of nest-building. Such attempts are not without value, but they are purely artificial and of no use to the systematic ornithologist. The classification of nests may take account of their situation, means of support, shape, materials or other characters, or of two or more of these. Taking the first-mentioned consideration as a basis we may group birds into miners, such as the kingfisher and the sand-martin; mound-builders, like the brush-turkey and scrub-pheasant of Australia; masons, which use a sort of mortar of earth or clay, including several swallows and allied birds, etc. One of the most distinctive categories is that of the borers, such as the woodpeckers and their relatives, which carve out tunnels and chambers in the trunks of trees as breeding-places. Many of the terms employed in nest classification are useful for descriptive purposes. Such are platform-nests, basket-nests, pensile nests, etc., or, as names of birds, weavers, tailors, felt-makers, etc. As a general rule birds of the same family or lesser group will agree pretty well in their style of nidification; but there are many exceptions, as, for example, the North American tyrant-flycatchers, among which a remarkable diversity of style in architecture exists.

**Methods of Construction.**— Birds choose for their nests the material of that kind to which they are habituated which lies nearest; and if it cannot be found will seek a good substitute, so that the nests of birds whose specific range covers a wide region will be found varied greatly and often much improved in some localities. Similarly the builders are likely to change the site when necessary, breeding in trees in wooded regions and on the ground or rocks where trees are absent. In this way certain birds have greatly modified their nesting habits since the civilization of their habitats — notably the swallows and swifts which all over the world abandon, as a rule, their natural breeding places in hollow trees, or about rocky cliffs, and make their nests under the roofs of farm outbuildings or in bird-boxes. The nests of closely related birds may vary considerably. In many families, as, notably, in the *Fringillidæ,* some species nest on the ground, others in bushes or trees; and it is hard to say which is to be considered the normal method.

A bird's nest sometimes forms an immense mass, as is the case with the birds of prey, crows, or herons, one of which, the umbrette of central Africa, makes a home large enough to fill a dumping-cart. Such great structures are likely to be used many years in succession; but few small nests outlast the winter. The hollow bed in the centre is formed by a lining of lesser and smoother substances. Small birds naturally use finer materials, and the character of the structures varies with the characteristics and habits of the birds. Some are made almost wholly of twigs, others of grass blades, others of flexible ribbons of such bark as that of the grape-vine, others of shreds of hempen fibre torn from the milk-weed and similar plants, others of a matted felt formed of the down of cat-tail flags or of ferns. Some are made in whole or in part of mud, and plastered upon rocks, either supported upon a ledge or projecting glued to the face of a cliff like a hollow bracket. Of this shape are the nests of many swifts, some of which are composed almost wholly of glutinous saliva, as is the case with that of the edible swift mentioned below. Some of the rudest nests externally are beautifully soft and smooth within; while others are exquisitely finished and adorned outside as well as in; or are intricately woven, as are the pensile hammocks of the vireos, the pouches of the Baltimore orioles, European titmice and others, and the leaf-sewn nests of the tailor-birds and many humming-birds. In most cases the female is the architect, while the male is per-

mitted to do little but bring materials which are often rejected by the fastidious builder. While most, especially of the smaller kinds of birds, separate into pairs and seek secluded places for their homes, others breed gregariously, as is the custom of many seafowl and most herons, pelicans, etc. Some of the land-birds, as the swallows, betray a tendency toward this; but the most remarkable case is that of the African social weaver-birds (q.v.), which actually build a roof in common, beneath which each pair of the flock establishes its individual dwelling. This strictly community life does not occur elsewhere among birds, although cases of commensalism are occasional.

**Edible Nests.**— Few birds' nests serve any human utility, though many are utilized by other members of the animal kingdom. One, however, is valuable as food. This is the nest of the selangane (*Collocalia fuciphaga*) or of related species of swift or swiftlet of the Malay Archipelago, used as a delicacy by the Chinese. It has the shape and size of a half teacup, is attached to the rock in the interior of a cave and has the appearance of fibrous gelatine or isinglass. It is composed of a mucilaginous substance secreted by special glands, and is not as was formerly thought made from a glutinous seaweed. The caves in which these swifts dwell in crowds are numerous in northern Sumatra and in Borneo, especially near the north end of the island, and are in most cases the property of wealthy owners, who get a large annual income from the hazardous occupation of securing the nests, which can be done only by climbing about the interior of the great sea-caves, holding torches and raking off the nests into little bags hung upon the end of the pike-poles. The best, which are whitish in color, and almost free from any mixture with the pure glutine from the glands in the mouth of the bird, are worth $10 to $15 a pound.

Among works dealing with the subject of birds' nests are Rennie, 'Architecture of Birds' (London 1831); Wood, 'Homes Without Hands' (New York 1865); Pycraft, 'Infancy of Animals' (New York 1913). Special books for the United States and Canada are Bendire, 'Life Histories of North American Birds' (with colored plates of eggs, Washington 1892–95); Davie, 'Nests and Eggs of North American Birds' (Columbus, Ohio 1898); Reed, 'North American Birds' Eggs' (New York 1904); Ingersoll, 'Primer of Bird Study' (New York 1915).

ERNEST INGERSOLL.

**BIRDS, Plants Attractive to.** Certain trees, shrubs and herbaceous plants bear fruits which afford food for birds. These have been discovered by observation, and by the scientific examination of the contents of birds' stomachs. By planting those species, therefore, which have been proved most desirable and that are suited to the climate and soil of the chosen location, birds can be attracted to the vicinity of dwelling-houses or to any other desired spot as a copse or shrubbery; or, on the other hand, lured away from valuable orchards, since they fortunately appear to like best arid, bitter, sour or aromatic fruits, distasteful to human beings, even better than the cultivated kinds.

Moreover, these bird-attracting plants are apt to be ornamental as well, since many have pretty fruits, red in color and often clinging to their branches far into the winter, furnishing grateful additions to the meagre fare of the hard-weather birds. Among the most frequented trees are the various wild cherries (*Prunus*); dogwoods (*Cornus*); pepper-tree (*Schinus*); pepperidge (*Nyssa*); China-tree (*Melia*); pines (*Pinus*); oaks (*Quercus*); magnolias (*Magnolia*); apples (*Acer*); manzanita (*Arctostaphylos*); cedars and junipers (*Juniperus*); hollies (*Ilex*); mountain ashes (*Pyrus*); hackberries (*Celtis*); sassafras (*Sassafras*) and thorns (*Cratægus*). The mulberry (*Morus*) is the prime favorite, and the tree most used for tolling the birds away from cultivated fruits.

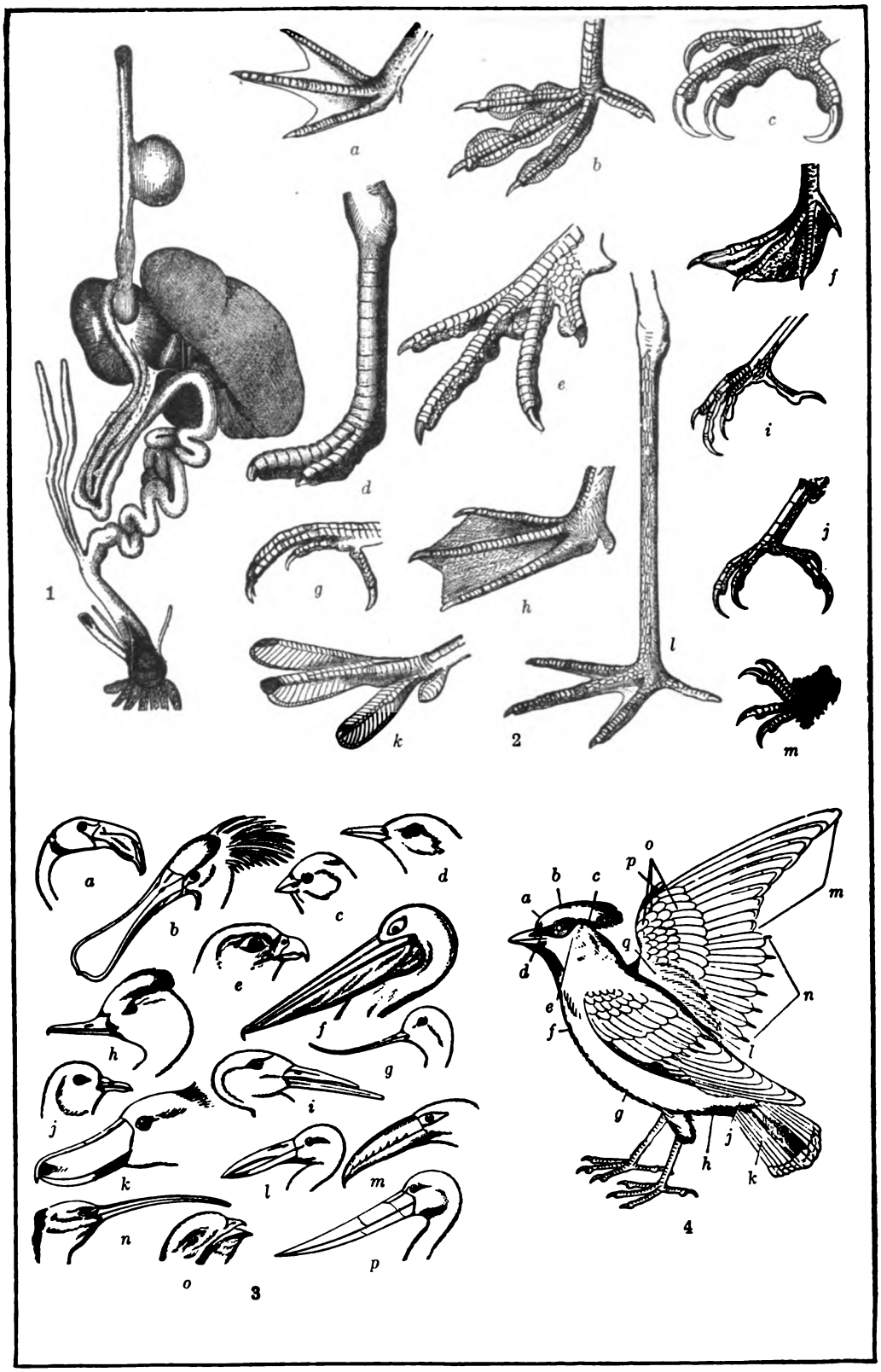
For shrubberies, one can plant with success all of the ordinary edible small fruits and berries besides the elders (*Sambucus*); service (——) or juneberries (*Amelanchier*); wild roses (*Rosa*); snowberries (*Symphoricarpus*); sumachs (*Rhus*); spicebush (*Benzoin*); pokeberry (*Phytolacca*); cornels (*Cornus*); bearberry (*Arctostaphylos*); silverberry (*Eleagnus*); buffalo berry (*Shepherdia*); buckthorn (*Rhamnus*); bayberries (*Myrica*); black-alder (*Ilex*); viburnums (*Viburnum*); bluewood (*Condalia*); lotebush (*Zizyphus*). firethorn (*Cotoneaster*); nockaway (*Ehretia*); barberry (*Berberis*); and a number of others.

Climbing plants can also be utilized, among them the wild grapes (*Vitis*); Virginia creeper (*Psedera*); *bittersweet* (*Celastrus*); hog-peanut (*Falcata*) and milk-pea (*Galactia*).

The many sparrows feed chiefly on weed seeds, but more acceptable plants from the gardener's point of view can be offered to them, such as the various so-called millets (*Panicum, Setaria, Eleusine*); princes' feather (*Amaranthus, Polygonum*); chamomiles, white and yellow (*Anthemis*); California poppy (*Escholtzia*); tarweed (*Madia*); bachelor's buttons (*Centaurea*) and the like. Wild ducks are attracted by several aquatic and semi-aquatic plants, among the most important being the wild rice (*Zizania*); the wild celery, or tape-grass (*Vallisneria*); various pondweeds (*Potomageton*) and arrowheads, also called wapato and the Delta duck potato (*Sagittaria*). The wild millet (*Echinochloa*) and chufa tubers (*Cyperus*) also afford them food. Consult Kennard, H., 'List of Trees, Shrubs, Vines and Herbaceous Plants, native to New England, bearing fruit or seeds attractive to Birds' (Reprint from *Bird-Lore*, Vol. XIV, No. 4, 1912); McAtee, W. L., 'Plants useful to attract Birds and protect Fruit,' (Reprint from 'Yearbook of Agriculture' 1898); also many pamphlets, farmers' bulletins, circulars and reports published by the United States Department of Agriculture, and Bureau of Biological Survey.

HELEN INGERSOLL.

**BIRDS, Protection of.** During all the early history of this country little or no attention was paid to the destruction of birds or other wild animals. Probably the earliest law on the subject was one passed in Massachusetts in 1817, establishing closed seasons for certain animals and birds shot as game. It was not




1 Digestive Organs.

2 Forms of Feet — a, incised palmate foot; b, k, lobe-foot; c, g, insessorial foot; d, runner's foot; e, scratcher's foot; f, totipalmate foot; h, palmate foot; i, passerine foot; j, m, scansorial or yoke foot; l, staff foot.

3 Forms of Head and Bill — a, flamingo; b, spoon bill; c, yellow-hammer; d, thrush; e, hawk; f, pelican; g, avocet; h, saw-bill; i, scissor-bill; j, dove; k, shoe-bill; l, gap bill; m, arassari; n, ibis; o, song-bird; p, stork.

4 Feathers of a Bird — a, frontal; b, crown; c, occipital; d, bill; e, cheek; f, breast; g, abdominal; h, rump; i, croup; j and k, sickle feathers; l, back; m, primary quills; n, secondary quills; o, coverts; p, pinions; q, shoulder-pinions.

until many years later that any protection was thrown over small birds, even in New England. About 1880 it began to be fashionable for women to adorn their hats and other decorative garments with the feathers of birds, and the whole world was ransacked for fine feathers. The enormous destruction of bird-life large and small that ensued pained bird-lovers and humane persons, and alarmed economists, who understood the immensely beneficial service birds did in aiding to keep down the hordes of injurious insects that preyed on our grain fields, orchards and gardens. Societies for bird-protection were organized in Great Britain and on the continent of Europe, and in the United States Audubon societies came into existence, and exerted a powerful and permanent influence, as described elsewhere (see AUDUBON SOCIETIES). The result of this was to discourage the wearing of feather-ornaments, and the restriction of the local supply, by laws passed in most of the States prohibiting the killing of game-birds and wild fowl except during limited seasons of the year; and the prohibition of the killing, or destruction of their eggs, of all other birds, with a few exceptions, such as some hawks, the crow, etc., regarded as injurious. With these laws behind them the Audubon societies and other friends of the birds were able to punish wanton shooting and trapping, guard breeding-colonies of herons (especially the egrets), gulls, terns and wild-fowl; and to carry out plans, now widely useful, for education of the young in the interest and value of birds, and regard for them and for other native animals. In this way the destruction of birds for millinery use was largely stopped; but in order to complete the reform greater co-operation with foreign efforts in the same direction was needed. This was seen to be a matter of Federal action, and first resulted in the United States Statute of 4 March 1909, known as the Lacey Act. This prohibited the importation into the United States of any bird or other animal declared by the Secretary of Agriculture to be injurious; and forbade common carriers handling or transporting any such animals, or their dead bodies, or parts thereof, or any animals killed in, or shipped from, any State or Territory in violation of the laws. This prevented would-be evaders taking advantage of inequalities between the States as to "open seasons" for game.

This inequality among State laws as to the periods when shooting was permitted was the cause of continual dissatisfaction and evil, especially as to ducks, geese and shore-birds, during their annual migrations between the tropics and their northern breeding-places; the open season for them began early in the South and extended late in the North, so that the intent of various local laws was practically annulled, and this class of birds was threatened with extinction. After a long campaign of effort Congress came to adopt the theory that the migratory birds, being in most cases mere travelers across States, were not local residents nor State property, but belonged to the people at large; and if they were to be saved to the people the national authority must intervene. Congress, therefore, passed (4 March 1913) the Migratory Bird Law, popularly known as the McLean Law in compliment to its foremost promoter, Senator McLean of Connecticut, the gist of which is as follows:

"All wild geese, wild swans, brant, wild ducks, snipe, plover, woodcock, rail, wild pigeons, and all other migratory game and insectivorous birds which in their northern and southern migrations pass through or do not remain permanently the entire year within the borders of any State or Territory, shall hereafter be deemed to be witnin the custody and protection of the Government of the United States, and shall not be destroyed or taken contrary to regulations hereinafter provided therefor. The Department of Agriculture is hereby authorized and directed to adopt suitable regulations to give effect to the previous paragraph."

These regulations have been issued in successive bulletins by the Biological Bureau of the Department of Agriculture, with slight changes from year to year. The most important effect of this law — and a very far-reaching benefit — is stoppage of the shooting of wild fowl in the spring, an evil especially prevalent in the Mississippi Valley.

The well-disposed people of Canada had been equally active in bird-protection with those of the United States, but met with the similar difficulty of inequality of laws between their provinces; furthermore both countries were hampered by gunners and dealers shooting and trafficking more or less illegally across the border. It was perceived after the passage of the Migratory Bird Law in 1913 that its full purpose could not be realized in the United States, or availed of by the Canadians, except by co-operation. This resulted, after much effort, in formulating a "convention" or treaty between this country and Great Britain (for Canada), which unified the protective laws of both countries. This treaty was perfected in the autumn of 1916 and proclaimed by the President on 8 December; and several months later Congress passed an "enabling act," giving power and money to the designated officials to enforce its observance, as Canada had previously done for its side of the border. This treaty incorporates the substance of the Migratory Bird Law; declares that the close season on migratory game birds shall be between 10 March and 1 September (except for shore-birds along the northeastern coast, for which the close season shall be 1 February to 15 August); prohibits the killing, capture or destruction of eggs of all migratory song-birds at all times (with certain special local provisions and exceptions); and establishes prohibitory regulations in regard to international commerce in game or other birds. Consult Forbush, 'Useful Birds and Their Protection' (Boston 1908), and publications of the United States Department of Agriculture (Biological Survey), Reports of Game Commissions of the various States and provinces and reports and publications of the National Association of Audubon Societies (New York).

ERNEST INGERSOLL.

**BIRDS, The**, a play by Aristophanes, first performed in 414 B.C. The happy thought of the Birds is the establishment of Cloud Cuckoo town or Nephelococcygia, a city in mid-air, in order to starve out the gods by cutting their communications with the earth and restore to the birds their rightful sovereignty. It was produced at the time of the Sicilian expedition. But the traces which some modern critics have detected of admonitory satire of that overambitious project are very faint and

nebulous. The fleet had sailed, and even an Athenian audience would hardly have tolerated unpatriotic and ill-omened ridicule of an enterprise to which the entire power and the future of Athens were pledged. The comedy is then in the main a pure phantasia into which Aristophanes has distilled the quintessence of all the bird vocabulary, the bird lore, the bird mythology, the bird poetry of the Greeks.

Plausible and Hopeful with a raven and a jackdaw for guides are wandering in quest of some quieter city than litigious and party-ridden Athens. They knock at the doors of birdland and a long beaked runner bird "opens the wood" and admits them to the presence of King Hoopoe, the hero of Sophocles' recent tragedy. They have so to speak gone "through the looking glass."

After some preliminary badinage, the great thought of the foundation of Bird City strikes Plausible. Hoopoe in a lovely lyric summons his mate, the nightingale, whose answering song is represented by a flute solo, and calls all the birds to council. The chorus of birds come fluttering, twittering and hopping in, amid the scurrilous comments of Plausible and Hopeful. They are at first very angry with Hoopoe for entertaining their enemy, man. The threatened conflict is resolved by the usual compromise and there follows a set debate on the magnificent new project submitted to them by the "two strangers from wise Hellas." The birds are won over by Plausible's denunciations of the usurpations of the Olympians that have robbed them of their ancient prerogatives. The birds themselves expand and develop this theme in the magnificent anapaests amusingly paraphrased by Courthope in his charming 'Paradise of Birds.'

> "We wish to declare how the birds of the air
> All high institutions designed,
> And holding in awe art, science and law,
> Delivered the same to mankind."

Matthew Arnold's Poor Mathias draws its inspiration from the same source.

> "Was it as the Grecian sings
> Birds were born the first of things?"

Andrew Lang transposes it into the key of savage ethnology in his 'Barbarous Bird Gods.'

> "We would have you to wit that on eggs though we sit and are spiked on the spit, and are baked in the pan,
> Birds are older by far than your ancestors are, and made love and made war ere the making of man."

Swinburne translates it to show how nearly English anapests match the resonant harmonies of the Greek.

> "Come on then ye dwellers by nature in darkness and like to the leaves' generations,
> That are little of might, that are moulded of mire, unenduring and shadow-like nations."

The plan once accepted, execution follows with magic celerity. The birds discover in themselves all needful capacities and resources.

> "There came a body of thirty thousand cranes
> With stones from Africa in their craws and gizzards,
> Which the stone curlews and stone chatterers
> Worked into shape and finished. The sand martens
> And mud larks too were busy in their department,
> Mixing the mortar while the water birds
> As fast as it was needed brought the water." (Frere)

After the realization of the happy thought the last half of the comedy as usual illustrates its consequences in a series of farcical scenes. The new colony is visited by every type of ambitious, designing projector and fakir in Greece. And Plausible's dealings with the petitions and the pretensions of the poet, the priest, the political sycophant, the sophist, and designer of the city beautiful, afford material for so many scenes of parody, buffoonery and farce. Prometheus comes in camouflaged by an umbrella from the thunder bolts of Zeus. Winged Iris, messenger of the Homeric gods, in the rôle of a saucy soubrette is arrested and brought in by the guard for "flying about in other peoples' chaos." And her threats to tell "Pa Zeus" on them are answered by Plausible in terrific strains of more than Æschylean sublimity. Finally a deputation from the gods headed by Neptune and Heracles appears to treat for terms of peace. Heracles, the glutton, and shirtsleeve diplomatist, cannot resist the savor of a dish of rebel squabs which Plausible is ostentatiously preparing and he concedes a peace that yields to the birds the beautiful maiden Sovereignty herself. A riotous celebration of the marriage of Plausible and Sovereignty furnishes the motive of the song and dance and revelry of the concluding scenes.

There is an interesting account of a modern performance of the play at Cambridge, England, by Jebb in the *Fortnightly Review* 41.88.

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**BIRDS, Vision of.** See EYESIGHT IN THE LOWER ANIMALS.

**BIRDS OF AMERICA, The,** the monumental work of John James Audubon, the great American naturalist, first published in England between the years 1827 and 1830. It contained colored illustrations of 1,065 species of birds. The text is descriptive of the habits and manners of the birds observed by Audubon himself in his long wanderings over the North American continent.

**BIRD'S-EYE LIMESTONE,** one of the subgroup into which the Lower Silurian has been divided by New York State geologists, now called Lowville Limestone, in which the crystallized corals of the genus Tetradium appear as whitish points. The maximum thickness is 30 feet but is generally not over 20 feet. The rock is a fine-grained limestone, generally of a dove color and when free from the whitish points, or "eyes," is used as a secondary grade of lithographic stone. A tribolite (*Bathyurus extans*) is a characteristic fossil of the Lowville limestone.

**BIRD'S-FOOT,** (*Ornithopus*), a genus of about seven species of small slender pinnate-leaved, white, pink or yellow flowered annual herbs of the natural order *Leguminosæ*. The common and generic names were suggested by the shape of the articulated, cylindrical pods which resemble the bent claws of a bird. The principal species, *O. sativus,* is used as a forage plant. It is a member of the sub-family Papilionaceæ of the Leguminosæ. A small plant of this genus (*O. perpusillus*), having white or yellow flowers streaked with red, is common in Great Britain and on the continent.